



V10472

Panasonic VHS C Palmcorder

PV-10

Consists of
PV-10D/PV-A15

Operating Instructions



SINGLE HAND MOVIE

Features

- High Speed Shutter
- Flying Erase Head
- Power Zoom Function
- Video Playback
- Auto Tracking
- Digital Automatic Focusing
- Record Review
- Automatic White Balance
- CCD Image Sensor
- HQ (High Quality) System
- 3 Ways to Supply Power

Before attempting to connect, operate or adjust this product, please read these instructions completely.

VQTS2298 ®

Warranty Registration

The serial number of these products may be found on the bottom of the Palmcorder and on the surface of the AC Adaptor. No other has the same serial number as yours. You should record the number and other vital information here and retain this book as a permanent record of your purchase to aid identification in case of theft.

Date of Purchase _____

Dealer Purchased From _____

Dealer Address _____

Dealer Phone No. _____

Model No. PV-10D/PV-A15 _____

Serial No. _____

Safety Precautions

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

Your Compact VHS Palmcorder is designed to record and play back in Standard Play (SP) and Super Long Play (SLP) modes. You can also play Compact VHS Palmcorder recording with the VHS PlayPak, through your VHS VCR.

CAUTION: TO PREVENT FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

This Palmcorder is equipped with the HQ System to provide excellent video pictures, and is compatible with standard VHS equipment.

Only use those tapes with the **VHS** mark. It is recommended that only cassette tapes that have been tested and inspected for use in VCR machines with the **VHS** and/or **VHS** mark be used.




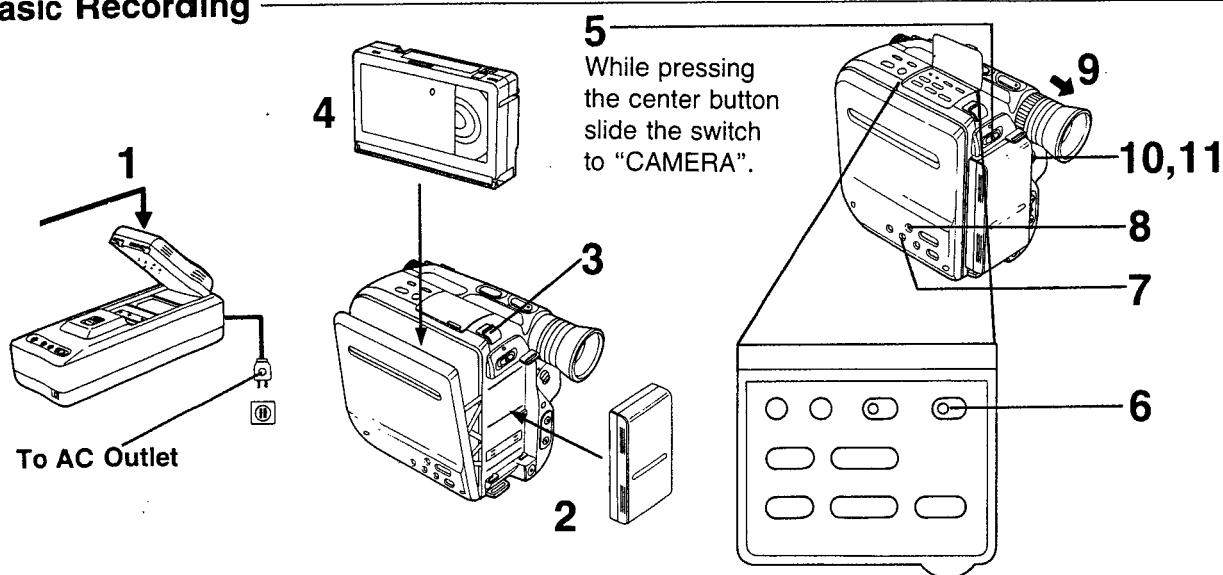
 CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN		This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL		This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

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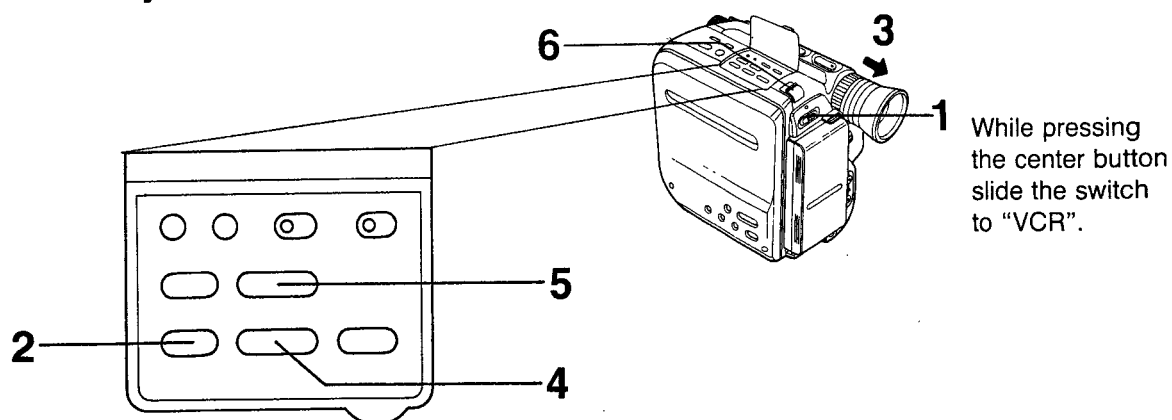
Basic Steps

Basic Recording



- 1** Charge the Battery Pack fully before operation.
- 2** Insert the Battery Pack.
- 3** Slide the Eject switch to open the cassette door.
- 4** Insert a cassette with record tab.
- 5** Set the VCR/OFF/Camera Selector switch to "CAMERA".
 - The Palmcorder will go into the Record/Pause mode.
- 6** Select desired recording speed (SP or SLP).
- 7** Select "Auto" with the White Balance button.
- 8** Select "Auto" with the Focus button.
- 9** Pull the Viewfinder to it's fully extended position.
- 10** Slide the Record/Pause switch down and release to start recording.
- 11** Slide the Record/Pause switch down and release again to pause recording.

To Watch Playback in the EVF (Electronic Viewfinder)

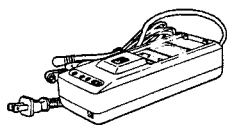


- 1** Set the VCR/OFF/Camera Selector switch to "VCR".
- 2** Press the Rewind button.
- 3** Pull the Viewfinder to it's fully extended position.
- 4** Press the Play button.
- 5** Press the Stop button when playback is finished.
- 6** Slide the Eject switch to remove the tape.

Palmcorder System

Accessories to suit your every need!

Power Supplies



AC Adaptor

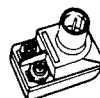


Battery Pack



Car Battery Cord
(optional)

To Connect



300ohm-75ohm
Transformer



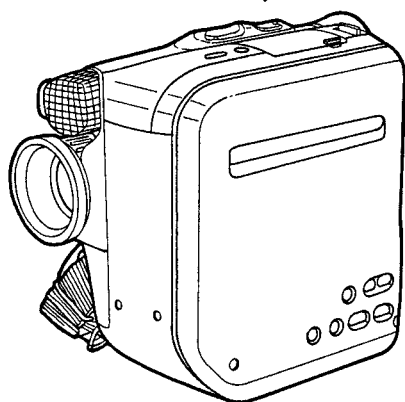
VHF Connecting
Cable



Audio/Video
Cable



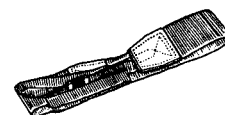
RF Adaptor



To Transport

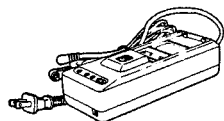


System Carrying Case
(optional)



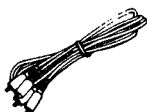
Shoulder
Strap

For Re-Recording (with Video/Audio)



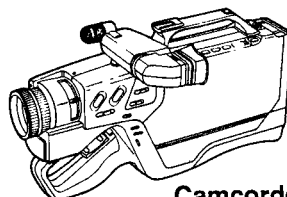
AC Adaptor

+



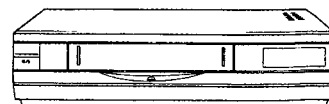
Audio/Video
Cable

+



Camcorder

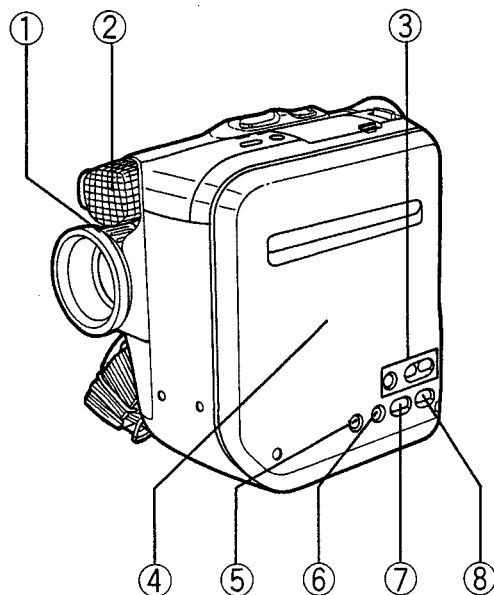
OR



VCR

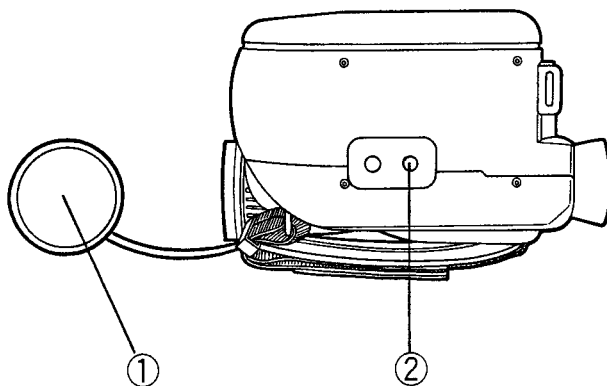
Description of Controls

Front View



- ① **Lens Hood**
Shields the camera lens and accepts the lens cap.
- ② **Built-In Microphone**
- ③ **Focus Button, ∞ (Far) and Near Buttons**
Use the Auto position for constant auto focus. In the Manual position ("MF" will appear in the EVF), you may adjust the focus using the ∞ (Far) and Near buttons.
- ④ **Cassette Compartment**
- ⑤ **High Speed Shutter Button**
Capable of recording action at 1/500 or 1/1000 of a second for still or slow motion playback.
- ⑥ **White Balance Button**
When the White Balance function is in the Auto position the camera will automatically maintain the optimum color balance in either indoor or outdoor lighting conditions.
- ⑦ **Fade Button**
When this button is pressed, the picture in the viewfinder and on the tape will fade out. When the button is released, the picture will automatically fade in.
- ⑧ **Backlight Button**
Press this button while recording your subject and the lens opening will automatically compensate for high contrast lighting conditions.

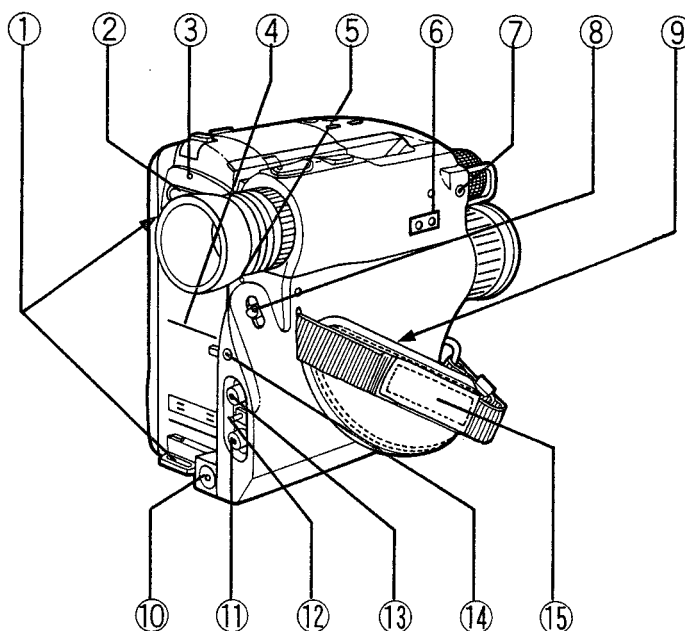
Underside View



- ① **Lens Cap**
The lens cap with clip can be attached to the hand strap to prevent misplacement.
- ② **Tripod Mounting Hole**

Description of Controls (continued)

Rear View



① **Strap Attachment Rings**

② **VCR/OFF/Camera Selector Switch**

Positions:

VCR

Play/Rec: Select this position to use the VCR functions.

OFF

Select this position to turn the Palmcorder OFF.

CAMERA

Record: Only the buttons for camera recording can be used here.

Edit: In this position you can hold down the play and search buttons to view scenes.

③ **Power Indicator**

④ **Battery Panel**

Attach a battery pack to use as the power supply.

⑤ **Tally Light**

The red Tally Light is lit when a recording is in progress.

⑥ **Brightness Control/Focus Control**

These controls adjust the brightness and focus of the viewfinder picture.

Note: These controls have been set at the factory. It is not necessary to adjust these controls under normal circumstances. But, should it become necessary, be careful to make the adjustment with a small, slender screwdriver so as not to damage the miniature control.

⑦ **External Microphone Jack**

To connect an external microphone. The built-in microphone is automatically disconnected when an external microphone is plugged in.

⑧ **Record/Pause Switch**

Used to start or pause camera recording.

⑨ **Clock Battery Compartment**

Insert the battery into this holder. The battery must be inserted in order for the date and time to be kept in memory.

⑩ **DC Input Connector**

For connecting the AC Adaptor using the DC Power Cable (supplied) or the Car Battery Cord (optional).

⑪ **Audio Output Connector**

For connection to an audio input connector on a TV Monitor, VCR or an audio tape recorder.

⑫ **DC Output Connector for RF Adaptor**

Used for the connection of RF Adaptor.

⑬ **Video Output Connector**

For connection to a video input connector on a TV Monitor or VCR.

⑭ **Battery Release Button**

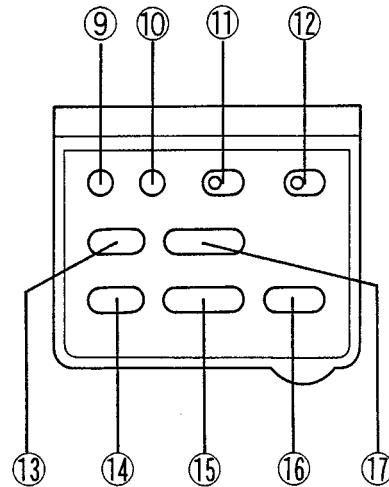
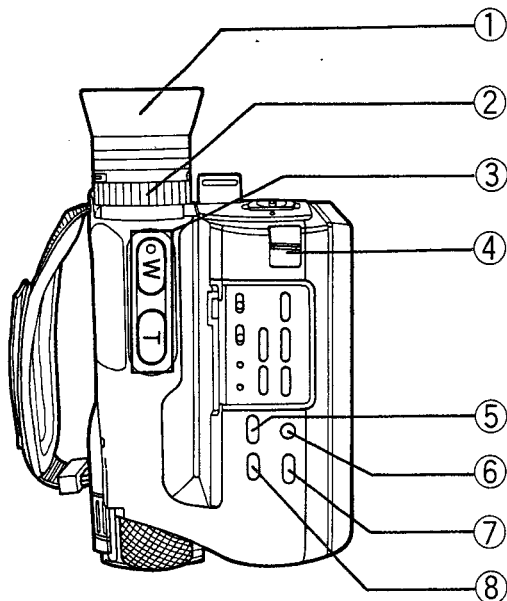
Press to release the battery pack.

⑮ **Hand Strap**

This strap can be adjusted to the size of your hand.

Description of Controls (continued)

Top View



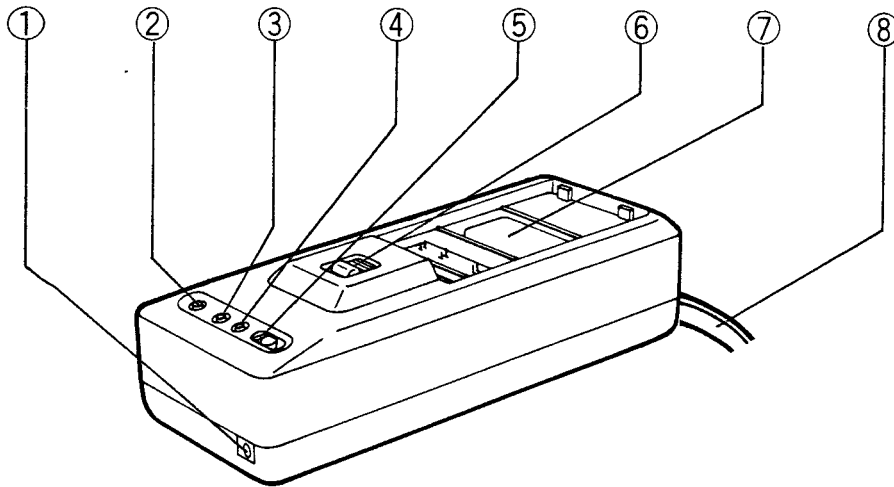
- ① **Electronic Viewfinder (EVF)**
Fully extend when in use. Retract for storage.
- ② **Vision Adjustment Ring**
Adjust this ring to your eyesight to assure good focus.
- ③ **Power Zoom Switch**
Used to "zoom-in" with telephoto ("T") or "zoom-out" with wide angle ("W").
- ④ **Eject Switch**
Slide this switch to insert or remove the cassette.
- ⑤ **Counter Display/Memory/Lap Time/Tape Remaining (D/M/L/TR) Button**
Used to display the battery charge status, tape counter, lap time counter, remaining tape time and to clear these displays from the EVF.
- ⑥ **Record Review Button**
Press this button to review the last few seconds of your recording.
- ⑦ **Date/Time Button**
Used to display the date and time or the date only.
- ⑧ **Reset Button**
Resets the Tape or Lap Time Counter.

- ⑨ **Select Button/(Tracking Control)***
Used to select the date or time when the clock mode is selected.
- ⑩ **Set Button/(Tracking Control)***
Used to set the date or time when the clock mode is selected.
- ⑪ **Tape Remaining Switch**
Used to select the correct tape length (T-20 or T-30) so that the tape remaining time will function properly.
- ⑫ **Tape Speed Selector**
Set this selector for the desired recording speed. See page 14 for use.
- ⑬ **Pause/Still Button**
Use this button to pause in Play or VCR Recording mode.
- ⑭ **Rewind/Search Button**
- ⑮ **Play Button**
- ⑯ **Fast Forward/Search Button**
- ⑰ **Stop Button**
Use this button to stop the tape.

* For Tracking Control refer to Page 15 for details.

Description of Controls (continued)

AC Adaptor



- ① **DC Output Connector**
For connecting the Palmcorder using the DC Power Cable (supplied).
- ② **Power Indicator Lamp**
This indicator lights up when the AC power plug of the AC adaptor is connected to an AC outlet.
- ③ **Charging Indicator Lamp**
Lights while the Battery Pack is charging. After charging, this light will go off.
- ④ **Refresh Indicator Lamp**
This indicator lights up when the Refresh switch is ON and disappears when the discharging is completed.
- ⑤ **Refresh Switch**
When this switch is set to ON, the battery will fully discharge its power to improve battery operation and prolong battery life.

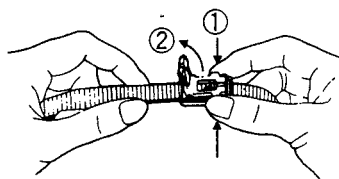
- ⑥ **Battery Release Switch**
Slide and hold this switch to release the battery pack.
- ⑦ **Battery Charging Compartment**
For charging the Battery Pack.
- ⑧ **AC Power Cord**

CAUTION:

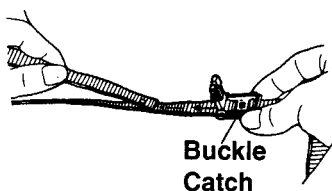
Operating at a voltage setting of 110/120/220/240V AC may require the use of a different AC plug. Please contact either a local or foreign electrical parts distributor for assistance in selecting an alternate AC plug. We recommend using the accessory power plug adaptor (VJSS0070) in an area which has special AC outlets.

Adjustments for Easy Handling

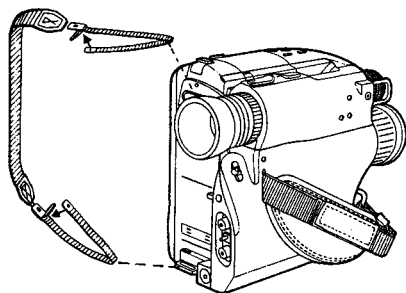
To Use the Shoulder Strap



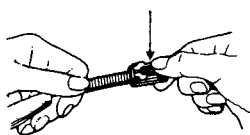
- 1** Pinch the tabs together on either side of clasp and raise it to expose the buckle's catch.



- 2** Unhook strap from buckle catch.

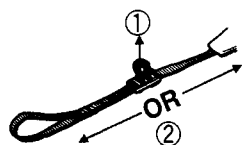


- 3** Thread the shoulder strap through the Strap Attachment Ring on the Palmcorder. Then re-hook it onto the buckle catch.



- 4** Press the clasp down on buckle to lock.

How to Adjust the Length of Shoulder Strap



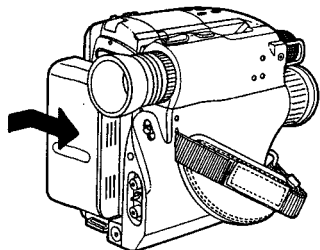
Pull a loop of the strap loose from its buckle, and then pull the strap firmly through the buckle to adjust its length.

Preparations

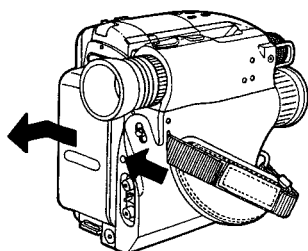
Power Supplies

A. Battery Pack - Outdoor Use

How to Insert the Battery Pack



How to Remove the Battery Pack



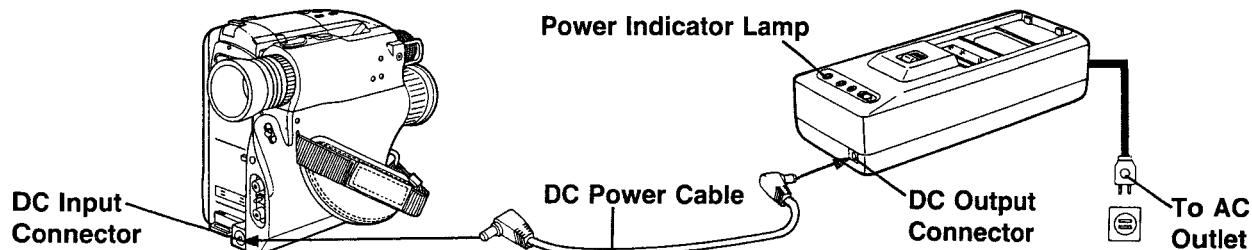
- Be sure to fully charge the Battery Pack before operation. Even a fully charged Battery Pack will discharge if left for a long time without a recharge. With a fully charged Battery Pack, you will have about 1 hour of continuous use.

- Line up the Battery Pack with the Battery Panel Mounting Surface and while pressing in, slide it to the right until it locks.

- While pressing the Battery Release button slide the Battery Pack to the left and lift off.

- Note after recharging the Battery Pack about 5 times, use the Refresh switch on the AC Adaptor as explained on page 11.

B. AC Adaptor (Supplied)

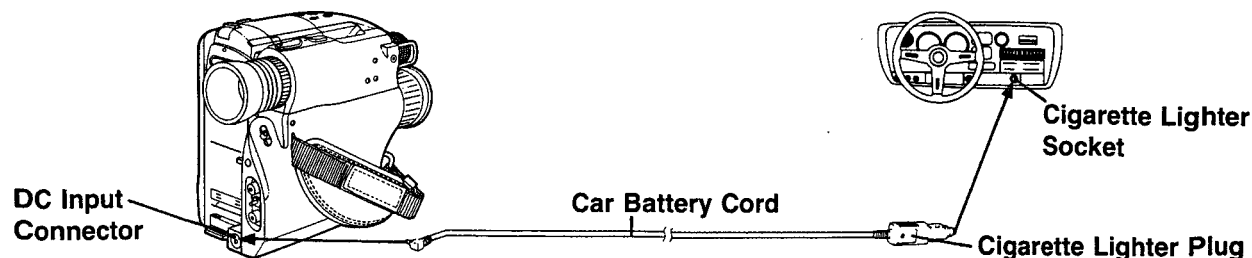


- 1 Set the VCR/OFF/Camera Selector switch to "OFF".

- 2 Attach the DC Output Connector on the AC Adaptor to the DC Input Connector on the Palmcorder.

- 3 Connect the AC Power Plug to an AC outlet. The Power indicator will light up.

C. Car Battery Cord (Optional)



- 1 Insert the Car Battery Cord into the DC Input Connector on the Palmcorder.

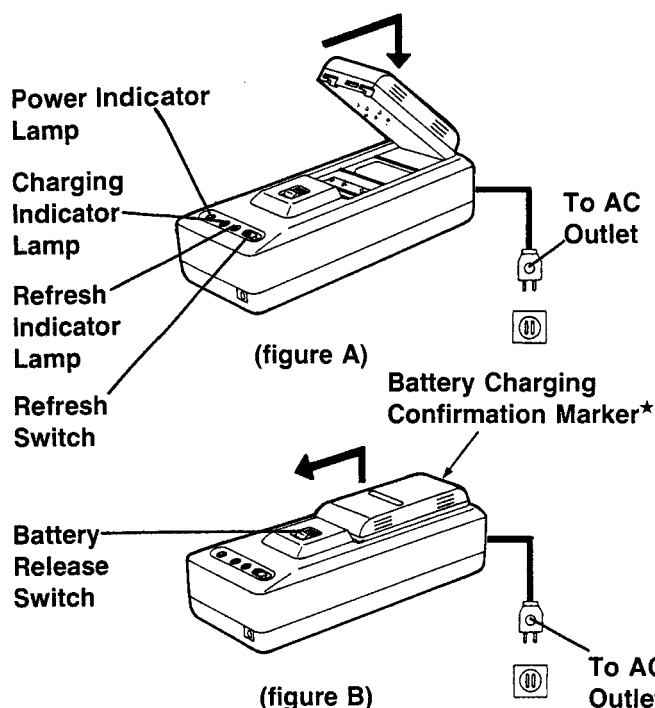
- 2 Start the car engine and insert the cigarette lighter plug of the Car Battery Cord into the socket.

- There is a fuse located in the lighter plug end of the cord. Should fuse replacement be necessary use the exact current rating (in amps).

Preparations (continued)

How to charge the Battery Pack

Your AC Adaptor can be used to charge the Battery Pack.



1 Connect the AC Adaptor Power Plug to an AC Outlet. Power indicator lights up.

2 Line the Battery Pack up with the AC Adaptor and press into place. (see figure A). Charging indicator lights up. When charging is completed, the light will go out.

Removing the Battery Pack

While sliding the Battery Release switch lift the Battery Pack up and out of the AC Adaptor. (see figure B).

- To preserve the life of your Battery, remove the Battery Pack from the Compact VHS Palmcorder and the AC Adaptor while not in use.

- ★ Use this marker as a reminder to yourself when the battery is fully charged or in need of a charge.

- This marker performs no function and is for your reference only.

Using the Refresh Switch

The Refresh feature on the AC Adaptor allows you to completely discharge the power from the Battery Pack before charging.

1 Insert the Battery Pack into the AC Adaptor as illustrated above.

2 Set the Refresh switch to ON.

The Refresh indicator will light up and discharging will begin. After discharging is completed, the indicator will go out, and the Charging indicator will light up. The Battery will then charge.

Occasion for use

- After recharging the Battery Pack several times the actual battery operating time will gradually decrease. For this reason it is recommended to use the Refresh function only after every 5 charges.
- The Battery Pack should charge in about 1 hour. It will take about 5 hours when both Refresh and charging are performed.
- Before storing the Battery Pack for a long period it is recommended to discharge it. To discharge the Battery Pack, unplug the AC Adaptor and insert the Battery Pack before setting the Refresh switch to ON. Set the Refresh switch to ON. The Refresh indicator will light up. When discharge is completed, the indicator will go out.

Preparations (continued)

A Word about Cassettes

A. Types of Video Cassette

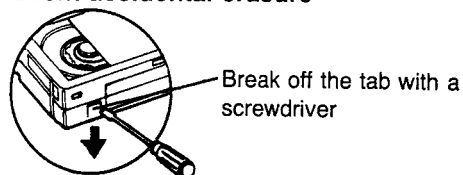
Tape Speed Selector position	Maximum Record/Playback Time	
	T-20	T-30
SP (Standard Play)	20 Minutes	30 Minutes
SLP (Super Long Play)	60 Minutes	90 Minutes

Use tapes with the **VHS** mark in this unit.

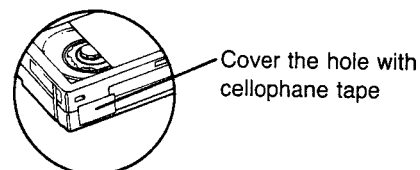
B. Erase Protection

Cassettes have a record tab to ensure that recordings are not accidentally erased.

•To prevent accidental erasure



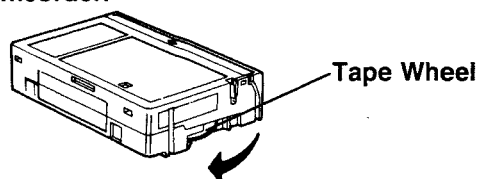
•To record again



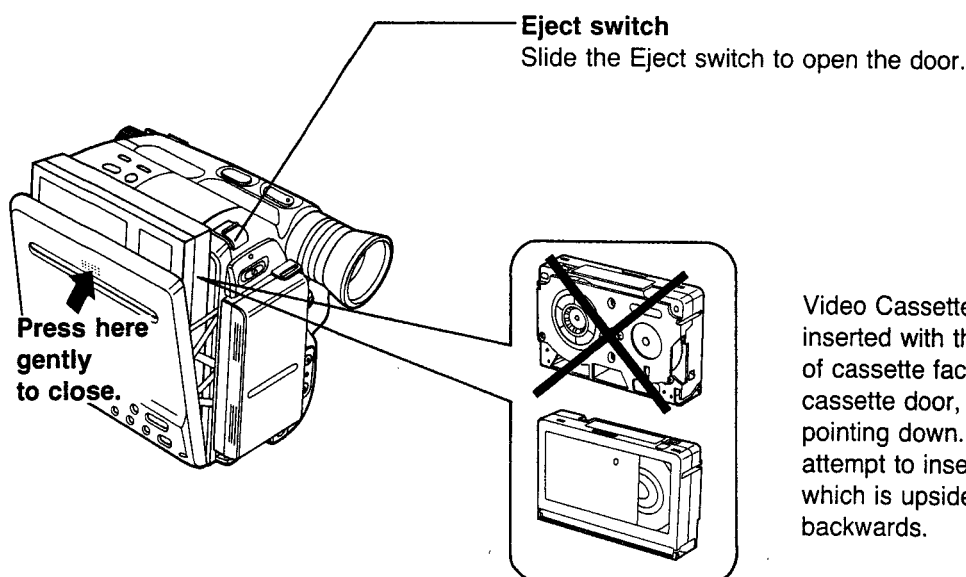
To Insert or Remove a Cassette

The Palmcorder may be ON or OFF when you insert or remove a cassette.

Before Placing the Cassette into the Palmcorder.



Take up slack in the tape by turning the Tape Wheel on the side of the Cassette in the direction of the arrow until there is no slack.



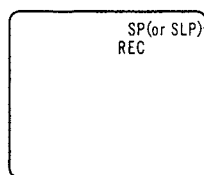
Video Cassettes can only be inserted with the window side of cassette facing the cassette door, and the arrow pointing down. Do not attempt to insert a cassette which is upside down or backwards.

Preparations (continued)

Electronic Viewfinder (EVF) Indications

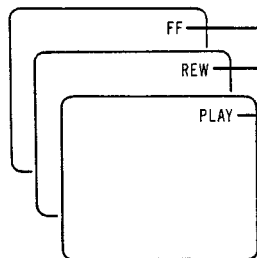
These indications will not be recorded on the tape.

Operating Mode Indications



- These indications will appear when in the Camera mode.

Recording is in progress in SP (or SLP) mode.



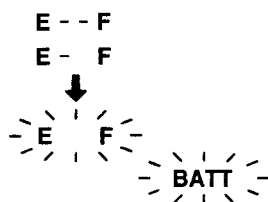
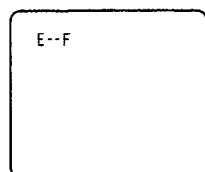
- These indications will appear when in the VCR mode.

Fast Forward

Rewind

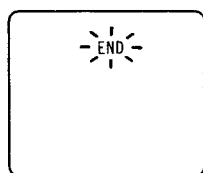
Playback

Battery Remaining Indication

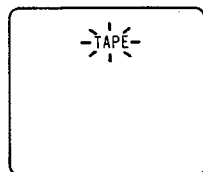


- When the Battery Pack is fully charged, "E - - F" appears.
- As the battery charge is consumed, the indicator changes: "E - F".
- "E F" and "BATT" will flash prior to automatic power shut off. When this happens, a battery recharge is necessary.

Tape Warning Indications

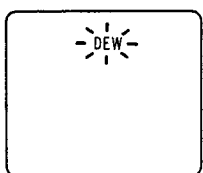


- This indicator will flash as a warning that the tape is about to end in Rec mode.



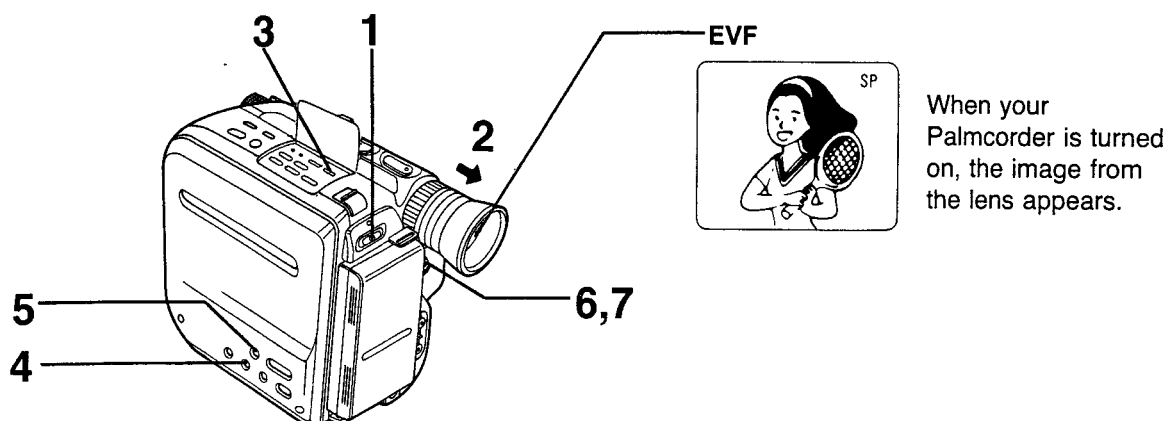
- If the record tab is missing, this indicator will flash and recording will not start.

Dew Indication



- If excessive moisture condenses in the unit, it will not operate. This indicator will flash for several seconds and the Palmcorder will automatically turn OFF. In this case, wait until the indicator no longer flashes when your Palmcorder is turned on again.

Camera Recording



Follow these simple steps to become familiar with the operation of your Palmcorder.

Preparations:

- Your Palmcorder is connected to a power source (Battery Pack, AC Adaptor, or Car Battery Cord).
- A cassette with a record tab is inserted.

Operation

- 1** Set the VCR/OFF/CAMERA Selector switch to the "CAMERA" position.
This is the camera record only position.
Edit Search:
Besides recording, you can view or search scenes by holding down the Play, FF/Search or Rewind/Search button in Rec/Pause mode.
- 2** Pull the Viewfinder out to its fully extended position and adjust the Vision Adjustment Ring to your eyesight.
- 3** Select desired recording speed SP (Standard Play) or SLP (Super Long Play).
- 4** Select Auto with the White Balance button for normal indoor or outdoor lighting.
"INDOOR" or "OUTDOOR" are for special color conditions (page 21).
- 5** Select Auto with the Focus button.
When powered ON and in the Camera mode, the Auto Focus system will function continuously.
- 6** Slide the Record/Pause switch to start recording.
The REC Indicator will appear and the Tally Light will be lit while recording is in progress.
- 7** Slide the Record/Pause switch again to pause.
In Record/Pause, slide the Eject switch if you need to remove the cassette.
After 5 minutes, pause mode will automatically go into standby mode, to conserve battery power.
Set the VCR/OFF/Camera Selector switch to the "CAMERA" position to return to the Record/Pause mode.

Automatic Easy Edit Standby

If you stop recording, but plan to resume within 24 hours, you can leave the cassette in the Palmcorder. Simply set the VCR/OFF/Camera Selector switch to "OFF" to shut off the Palmcorder after your recording is completed. This allows the Easy Edit feature to make a smooth transition between one scene and the next. After 24 hours, the tape will retract into the cassette, making automatic editing impossible. For manual editing, see page 18 under "Easy Editing".

Record Review

Press the Record Review button in the Record/Pause mode.
When you press the Record Review button in the Record/Pause mode, the last few seconds of your recording will play back on the viewfinder or monitor screen for review. Then you can start your recording from the Record/Pause mode in synchronization with the last segment recorded.

Playback

You can play back your Palmcorder recordings immediately on the viewfinder by following the steps given below.

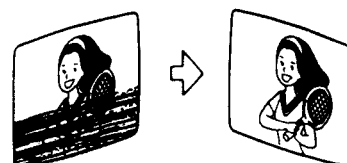
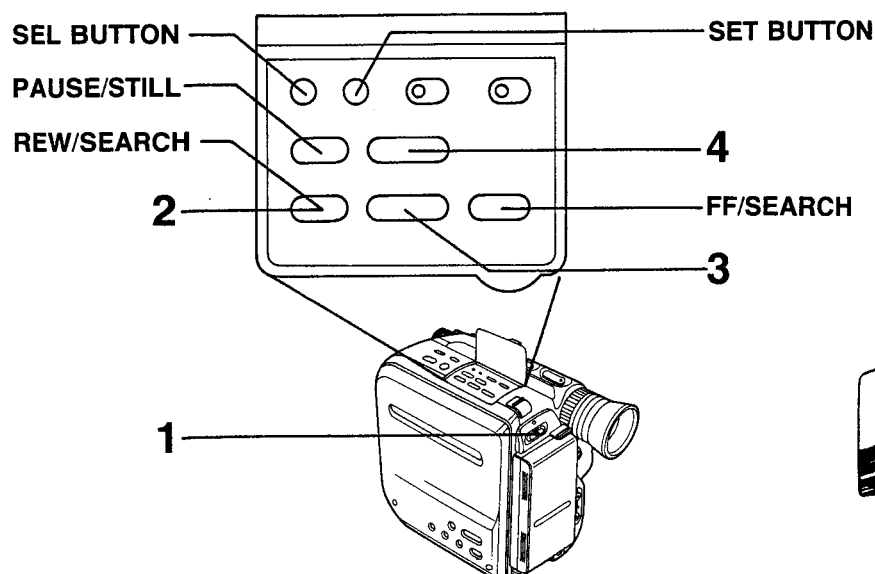
You may also play back your Compact VHS Palmcorder recordings directly to a monitor or TV (page 16), or on your home VHS VCR through the VHS PlayPak provided (page 24).

Preparations:

- Your Palmcorder is connected to a power source (Battery Pack, AC Adaptor, or Car Battery Cord).
- A cassette is inserted.

Operation

- 1** Set the VCR/OFF/Camera Selector switch to the "VCR" position.
- 2** Press the Rewind button to rewind the tape to the desired location.
- 3** Press the Play button to view the recorded picture.
- 4** Press the Stop button when playback is finished.



Auto Tracking

With Auto Tracking there is usually no need for manual adjustments to minimize noise in playback for most tapes. Auto Tracking continuously analyzes the signal to adjust for optimum picture quality for each recording.

However, with some recordings you may get a better result using Manual Tracking.

Tracking Control

Press the Set or Select button which is usually used for the Date/Time setting. Manual Tracking adjustment is intended for use during playback to minimize noise in the picture.

Special Effects in Playback Mode (Sound is Muted)

To Rapidly Locate A Particular Segment

- Press the Search button.
A rapid forward or reverse picture search will continue.
Press the Search button or Play button to resume normal speed.

Search Speed

Standard Play (SP) Search is about 3 times normal speed.

Super Long Play (SLP) Search is about 9 times normal speed.

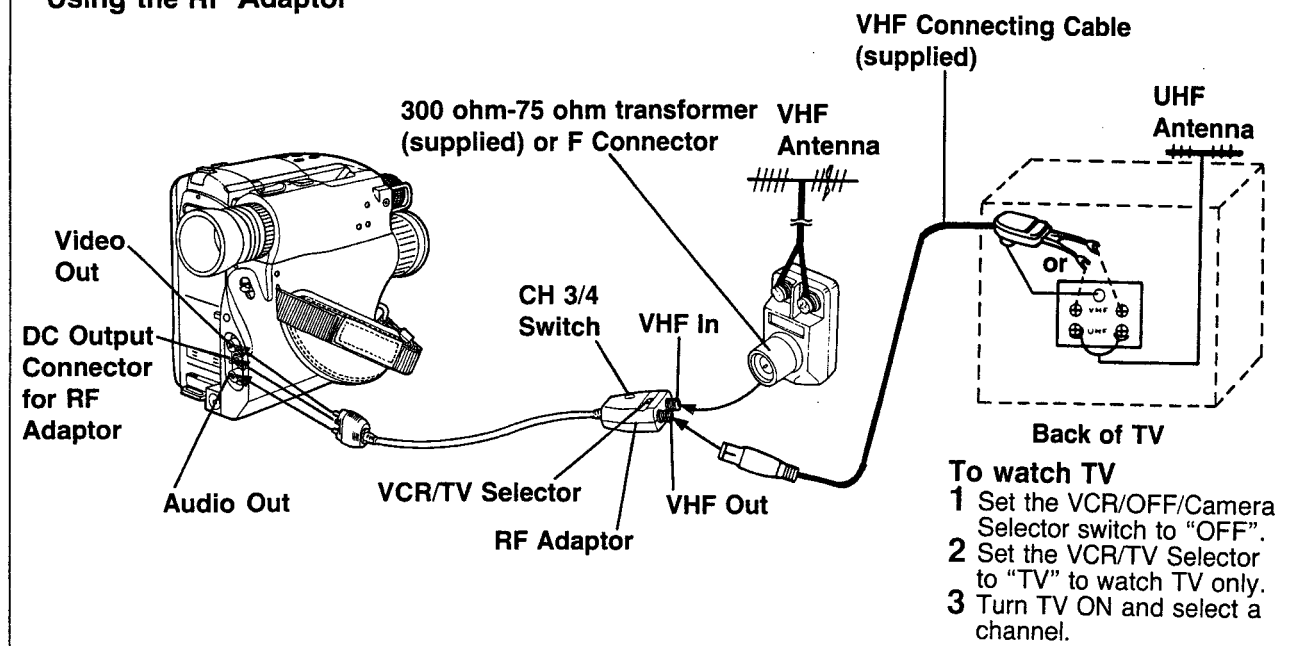
To View A Still Picture

- Press the Pause/Still button.
A freeze frame picture from the current playback appears.
- Press the button once more.
This releases the still and playback continues.

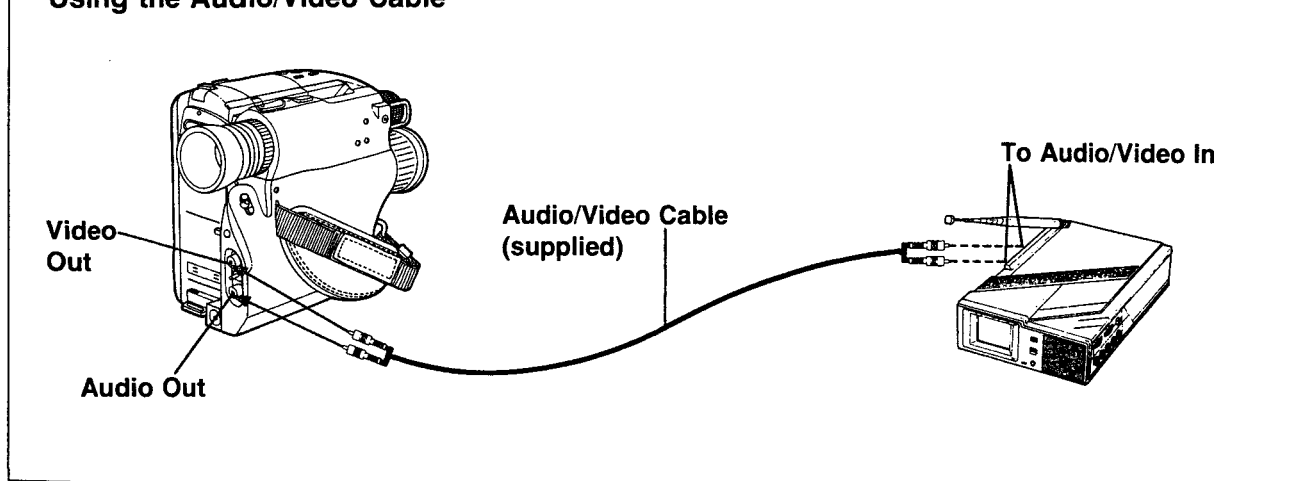
To Monitor Your Recording

Your Palmcorder may be connected to a TV to play back tapes or to monitor what you are recording. Follow the illustration below for hook-up.

When Your TV Does Not Have Video In & Audio In Terminals Using the RF Adaptor



When Your TV has Video In & Audio In Terminals Using the Audio/Video Cable



To Monitor

- 1 Connect your Palmcorder to a power source (Battery Pack, AC Adaptor, or Car Battery cord).
- 2 Set the VCR/OFF/Camera Selector switch to "VCR" or "Camera" mode on your Palmcorder and the TV ON.
 - If your TV has no Video In or Audio In terminals, select CH 3 or 4 on TV to match the CH 3/4 Switch on the RF Adaptor, when using the VHF Connecting Cable (see top diagram above). Then set the VCR/TV selector to "VCR" on the RF Adaptor.
 - Set the VCR/TV selector to "TV" to watch TV only.

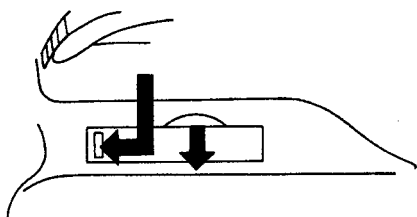
Useful Features

Date/Time Display

Your Palmcorder has an automatic date function which maintains the date and time, including leap year, up to Dec. 31, 2086. This function is kept

active by the watch size battery even when the Palmcorder power is OFF. The battery must be inserted before the date and time can be displayed.

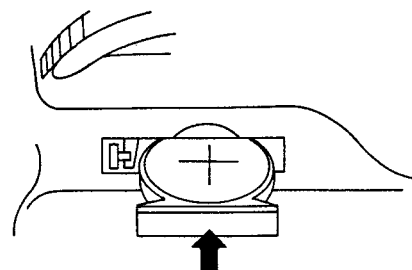
Installing the Battery



- 1 Lay the Compact VHS Palmcorder on its side with the hand strap facing upward.
- 2 Using your finger nail or a sharp object, press the battery compartment latch to the left and at the same time pull the battery tray out.
- 3 Insert one battery (supplied) into the battery tray with the \oplus side up and slide the tray into the battery compartment until it locks.

- Be careful not to reverse the polarity of the battery.

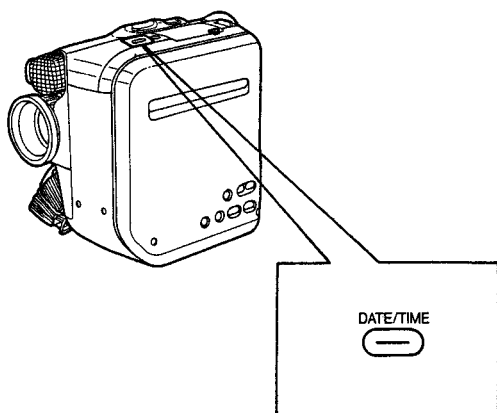
REPLACE BATTERY WITH PART NO. VSBS0007 (CR2032) ONLY. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.
CAUTION - BATTERY MAY EXPLODE IF MISTREATED. DO NOT RECHARGE, DISASSEMBLE OR DISPOSE OF IN FIRE.



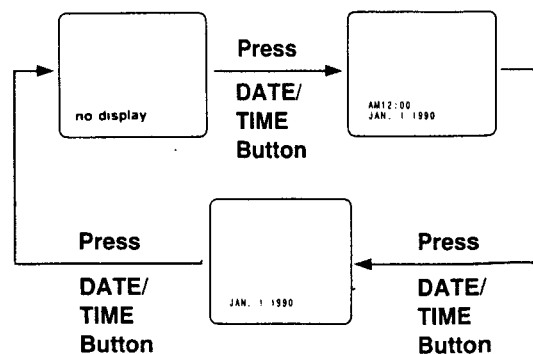
Note:

- Make sure that your Palmcorder power is off before replacing the battery.
- Keep the battery out of the reach of little children since swallowing it may be harmful.
- When the battery is installed improperly, is discharged, or is missing, "PLEASE CHECK BATTERY" appears on the EVF. Battery life is around 1 year.
- When the battery is discharged, the date and time will flash indicating a battery charge is necessary.

To Display the Date and Time



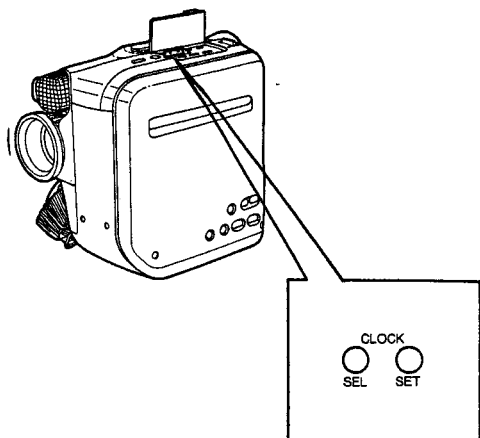
Turn your Palmcorder ON and look into the EVF. Pressing the Date/Time button will provide the following displays in order.



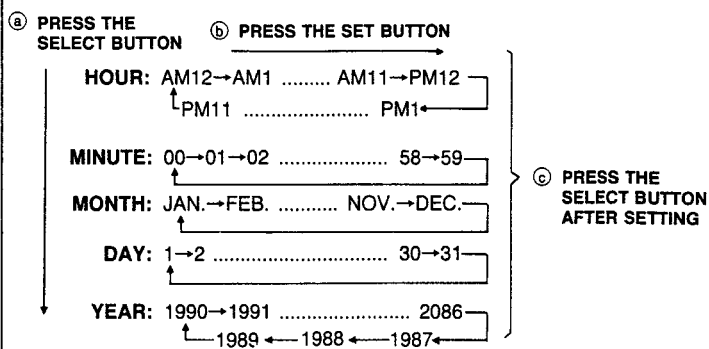
The selected Date and Time mode will be saved when the power is turned OFF.

Useful Features (continued)

Date/Time Setting



To Set the Clock



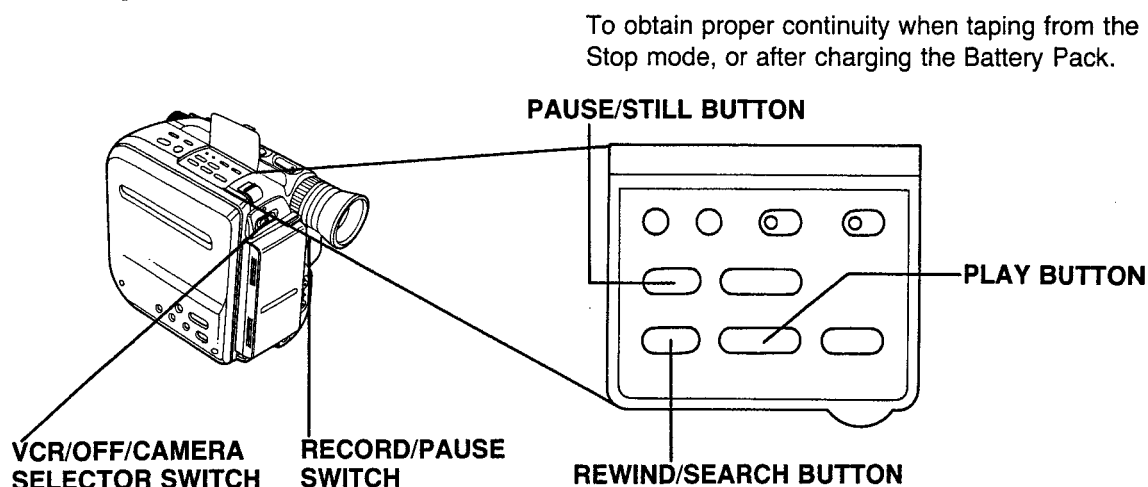
- 1** Press the Date/Time button in Record/Pause mode or Stop mode.
“AM 12:00 JAN. 1 1990” appears.
Whenever “AM 12:00 JAN. 1 1990” appears, it indicates that the clock needs adjustment.
- 2** Press the Select button.
The first portion of the Date and Time display will flash.

- 3** Press the Set button until the desired number(s) appear in the space you selected. Then press the Select button to fix that portion of the date and time.
- 4** Press the Select button again.
This locks in all the settings you have made.

Note:

- If the Set button is held down, the numbers will advance rapidly.

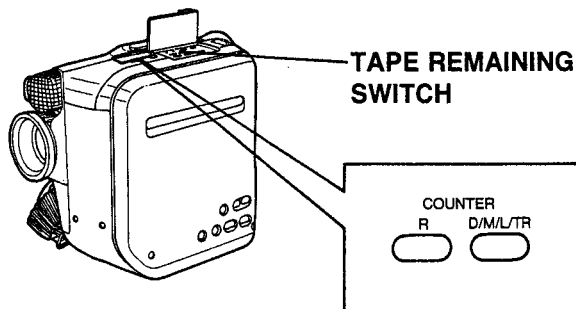
Easy Editing



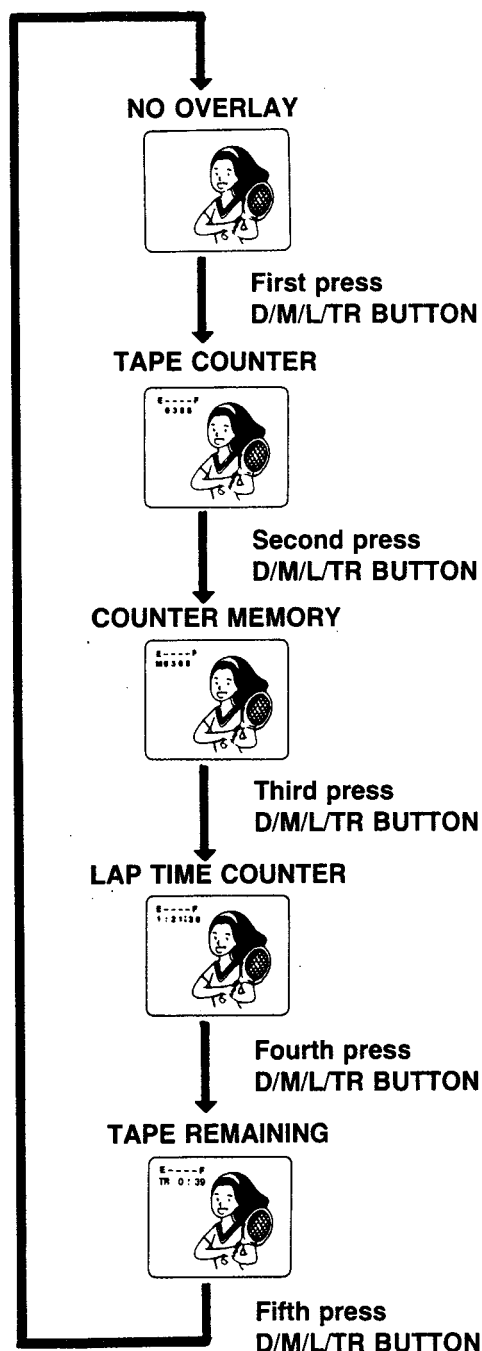
- 1 Set the VCR/OFF/Camera Selector switch to the "VCR" position.
Rewind the tape for a short distance (about 5 digits on the Tape Counter) by pressing the Rewind button. Then press the Play button and view the picture on the Viewfinder.
- 2 At the location where you wish to continue recording, press the Pause/Still button.
- 3 Set the VCR/OFF/Camera Selector switch to the "CAMERA" position; your Palmcorder will go into the Record/Pause mode. Then slide the Record/Pause switch to continue recording.

Useful Features (continued)

**Tape Counter ("0000")/Counter Memory/Lap Time Counter ("0:00:00")/
Tape Remaining ("0:00") (always accompanies the Battery indication)**



The following displays for each Tape and Time Counter function can be selected to track your current position, or find a desired tape location. Press the D/M/L/TR button repeatedly to get the desired display.



Tape Counter: Displays a reading for any position on the tape.
Press the Reset button to reset display to "0000".

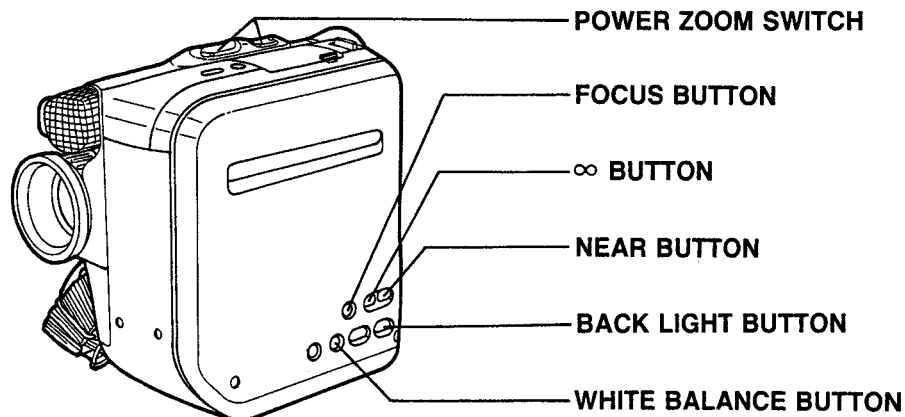
Memory Counter: When the Memory function is selected the Palmcorder will stop during Rewind or Fast Forward whenever it reaches the point where the tape counter was previously set to "0000".

Lap Time Counter: The elapsed time during a recording is displayed by the Lap Time Counter.
Press the Reset button to reset display to 0:00:00.

Tape Remaining: This display shows the time remaining on the tape in 1 minute segments, during playback or recording.

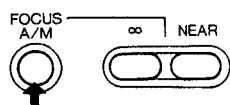
- Make sure the Tape Remaining switch is set to the proper position (T-20 or T-30) so that the tape remaining time will function properly.

Useful Features (continued)



Focus

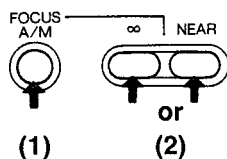
A. Auto Focus



Press the Focus button to obtain the Auto mode for normal use, and the lens will be automatically focused on the subject in the center of the EVF, even during a zoom.

In the Auto Focus mode no indication appears in the EVF.

B. Manual Focus (by hand)



Press the Focus button to obtain the Manual mode ("MF" will appear in the EVF), and then adjust the focus with the ∞ (Far) or Near button.

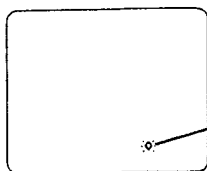
- 1 Aim your Palmcorder at the scene to be recorded.
- 2 Press and hold the "T" side of the Power Zoom switch until the lens zooms to the maximum close-up setting.
- 3 Press either ∞ (Far) or Near button for the sharpest picture at this setting. (It may be necessary to back away from the subject to focus the image properly.)
- 4 Press the "W" side of the Power Zoom switch. The picture should stay in focus over the entire zoom range. Re-focusing may be required when your Palmcorder is aimed at a new scene.

Under the following scene conditions, manual focusing is recommended.

- When recording a subject through glass.
- When recording a subject with a nearby foreground and background far from the Palmcorder.
- When recording a subject with distinct horizontal stripes.
- When the subject is not in the center of the Viewfinder.
- When recording subjects with shiny surfaces.
- When recording an obliquely angled subject.
- When recording a flat subject such as a white wall.
- When recording in low light situations.
- When recording a scene with fast motions, like a golf swing.

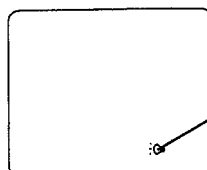
Useful Features (continued)

Auto White Balance



With the White Balance button, select Auto for continuous color balance in both indoor and outdoor lighting situations. Under the following conditions set the White Balance button to “☀” or “💡” as recommended, for better color reproduction in your recordings.

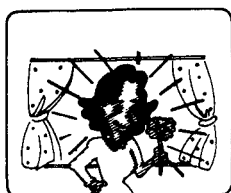
OUTDOOR “☀”: When recording an outdoor scene from indoors, or recording an outdoor scene using an amber filter.



INDOOR “💡”: When recording an indoor scene from outside, or recording an indoor scene using a blue filter.

White Balance is affected by Color Temperature. See the chart on page 27.

Backlight Button

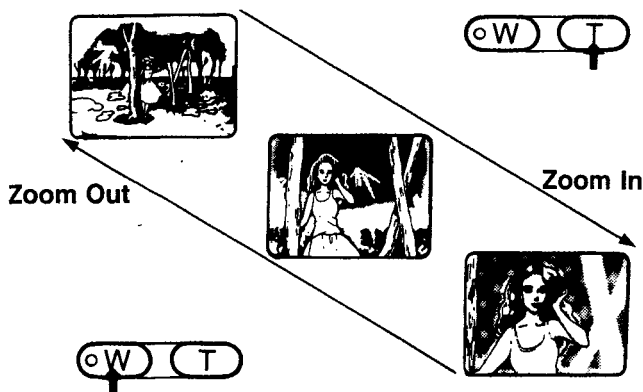


This button may be used to adjust the light level on a recording subject that is darker than the surrounding scene.

You will find this backlight adjustment useful for recording a subject in a shadowed area or in front of strong backlight.

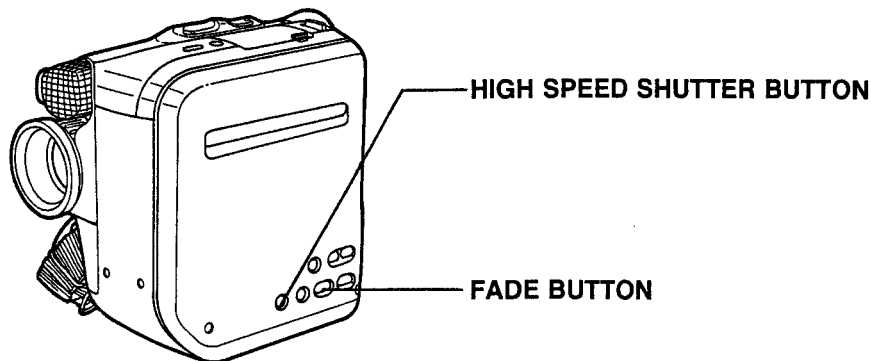
Press the Backlight button while recording a high contrast scene, then release it when the lighting condition changes.

Zoom

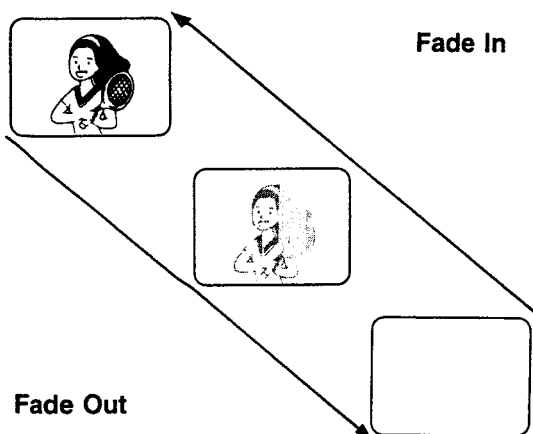


Your Palmcorder has a power zoom lens that gently changes the viewing angle. Zooming is possible by lightly pressing the “T” or “W” side of the Power Zoom switch.

Useful Features (continued)



Fade In/Out - Video Only; Audio Is Not Affected By Fade Control



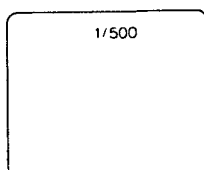
Use the Fade button to activate the fade feature. The picture will fade out when the Fade button is held down. When the button is released, the picture will fade in, eliminating sudden scene changes.

Fade In: Before starting a recording segment, hold down the Fade button until the picture fades out. Then slide the Record/Pause switch to start the recording, as you release the Fade button. The new scene will fade in.

Fade Out: To fade out at the end of a recording segment, hold down the Fade button. When the picture has faded out, slide the Record/Pause switch to pause the recording.

High Speed Shutter

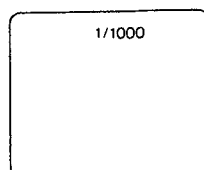
Select The 1/500th Shutter



This button may be used to record a clear, sharp image of high speed motion for fine point replay in still or slow mode, when watching the tape on Panasonic Hi-TECH 3 or Hi-TECH 4 VCR (3 or 4 head VCR). There are 2 Shutter speeds available.

Press the button to activate the 1/500 High Speed Shutter speed during recording. This mode should be used for subjects moving fast enough to cause blurs.

Select The 1/1000th Shutter



Press this button once more to select the 1/1000 shutter speed.

This mode should be used for extremely fast motions, like a golf swing.

Re-Recording

It is simple to dub tapes from your Palmcorder to an editing VCR or a Camcorder.

- Set up and connect the units as illustrated.
(Be sure to connect the AC Adaptor to an AC Outlet).

Preparations:

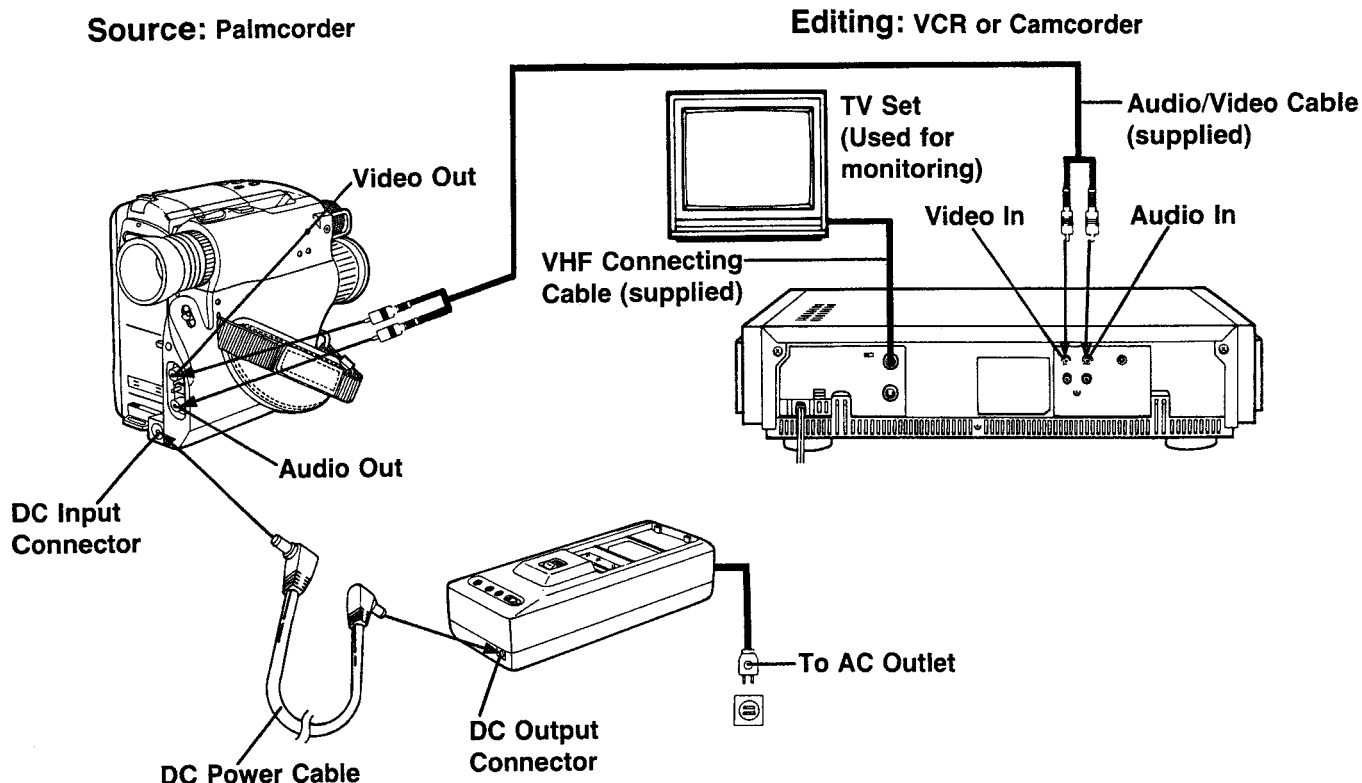
- Set the editing VCR's Input Signal Selector to "LINE", if applicable.
- Set the VCR/OFF/Camera Selector switch on the Palmcorder to the "VCR" position.

Operation

- 1** Insert a pre-recorded tape into the source Palmcorder.
- 2** Insert a blank tape, or one you want to record over into the editing VCR.
- 3** Press the Play button on the Source Palmcorder.

AND
The Record and Play buttons on the editing unit all at the same time.
 - To finish dubbing, press the Stop button on both units.

Connection



To Monitor the Re-Recording Process on Your TV

- Turn TV ON and select its VCR channel (either CH3 or CH4).
- Set the VCR/TV Selector on the editing VCR to "VCR".

CAUTION:

Unauthorized exchanging and/or copying of copyrighted recordings may be copyright infringement.

Using the VHS PlayPak

This Palmcorder uses a Compact VHS tape format. (TC-20 or TC-30)

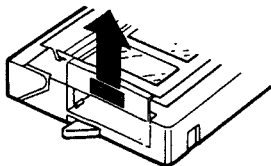
When the **VHS** Cassette is placed in the VHS PlayPak, battery power is used to adapt the Compact VHS format to the standard VHS cassette

size. The VHS PlayPak takes the tape out of the **VHS** cassette and positions it so that it can be played by the VCR. Once the **VHS** cassette is securely in place, the VHS PlayPak can be used with your VHS VCR just like any standard size VHS cassette.

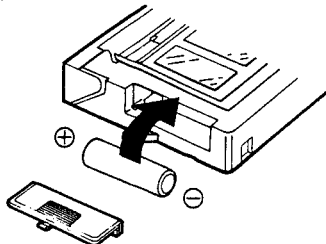
Installing the Battery

The VHS PlayPak is fully battery-powered. Before using it, be sure to install a battery.

- 1 Remove the Battery Compartment lid.

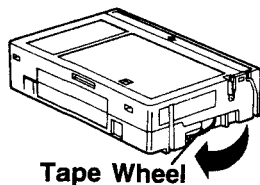


- 2 Place an "AA" size battery in the Battery Compartment as indicated inside the Battery Compartment, then replace the lid.



Note:

- If the battery runs down, the VHS PlayPak may stop before the automatic load or unload operation is complete.
- If the tape loading time is longer than normal, there is too little battery power left and battery replacement is necessary.
- Load the new "AA" size battery with its polarities (+ and -) aligned properly.
- Do not heat, disassemble or short-circuit the old battery.



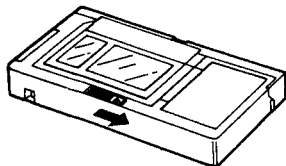
Tape Wheel

Before placing the **VHS** Cassette into the VHS PlayPak, take up any slack in the tape by turning the Tape Wheel located on the side of the Cassette, in the direction of the arrow, until there is no slack.

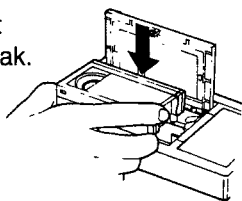
Placing the **VHS** Cassette into the VHS PlayPak

- 1 (a) Position the VHS PlayPak as shown.
(b) Slide the release button to the right.

The Tape Compartment Lid will open.



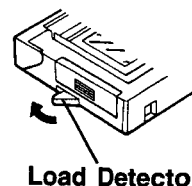
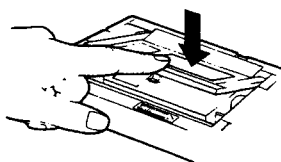
- 2 Position the **VHS** Cassette with its tape window to the left and place it in the VHS PlayPak recess. Allow the **VHS** Cassette to gently seat itself in the VHS PlayPak. Do not use force.



- 3 Gently push the cover of the VHS PlayPak down to latch it.

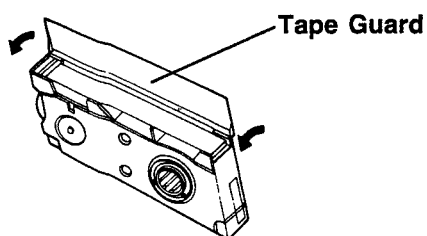
The cover latches with an audible click. The tape threads with a whirring sound and the red Load Detector retracts completely.

- Be sure the cassette reel area under the VHS PlayPak is free to turn while loading.



Load Detector

Using the VHS PlayPak (continued)



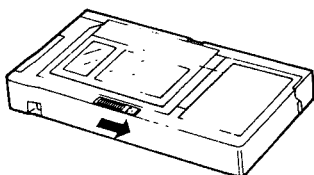
Be sure that the Tape Guard is closed when the **VHS** Cassette is placed in or removed from the VHS PlayPak.

Important: Read these instructions carefully before attempting to remove your **VHS** Cassette from the VHS PlayPak.

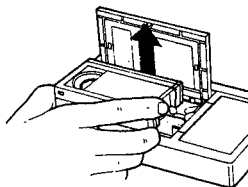
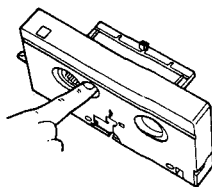
Failure to do so may result in permanent damage to the video tape.

How to Remove the **VHS** Cassette from the VHS PlayPak

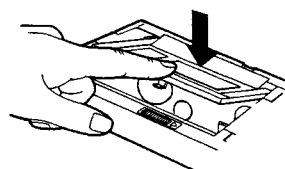
- 1** (a) Position the VHS PlayPak as shown.
(b) Slide the release button to the right.
A whirring sound indicates the video tape is rewinding from the VHS PlayPak to the cassette, then the VHS PlayPak cover will snap open.



- 2** Hold the VHS PlayPak securely in one hand and raise the **VHS** Cassette with a finger placed through the indicated access hole, grasp firmly and remove.



- 3** Close Compartment Lid.



Note:

- If you do not intend to use the VHS PlayPak for a long period of time, remove the battery and store it in a cool, dry place.
- The Load Detector extending from the left side of the VHS PlayPak indicates that loading of the tape is not complete.
- Attempting to insert the VHS PlayPak into a VCR while the Load Detector is extended may cause damage.
- Some noise or picture disturbance may occur at times during special effects playback with your VCR.

Notes on Operations

Battery Pack (P.10)

- Store the Battery Pack in a cool, dry, dark place.
- Do not drop it or subject it to strong jolts.
- Be careful not to put the Battery Pack near fire because this may cause a short-circuit.
- Batteries should never be disposed of in fire.
- Do not use any other chargers than specified.
- Do not use the Battery Pack for appliances other than specified.
- Do not use it below 32°F (0°C) or above 104°F (40°C).
- Do not use an insufficiently charged or worn out Battery Pack.

Car Battery Cord (P.10)

- Be sure to start the car engine before inserting the cigarette lighter plug of the Car Battery Cord into the cigarette lighter socket; otherwise, the cigarette lighter plug fuse may burn out when you start the engine.
- The car engine should be running while your Palmcorder is in operation. Make sure your car is in an open, well ventilated area.
- Disconnect the cigarette lighter plug when your Palmcorder is not being used.

Charging the Battery Pack (P.11)

- The useful operation time of the Battery will gradually decrease after repeated use and recharging. The Battery is no longer serviceable if the operation time is too short even after a sufficient charge.

Special Effects Playback (P.15)

- During search playback, horizontal noise bars will appear and there will be no audio.
- To protect the tape and Video Heads, your Palmcorder's operating modes will automatically revert as follows:
STILL —————→ STANDBY after 5 minutes.
STANDBY —————→ POWER OFF after 5 minutes when using a Battery Pack.
- When the tape reaches its end during playback, or fast forward, the tape will rewind automatically.

Tape Remaining (P.19)

- The lap time counter only functions in the REC mode.
- The remaining tape indicator "0:00" will continue flashing during the last 2 minutes as a final warning that the tape is about to end.
- The remaining tape time is being calculated when the indicator "--:--" flashes (up to 30 seconds) in the EVF.

High Speed Shutter (P.22)

- For proper color reproduction it is recommended that you use this feature outdoors. For indoor High Speed Shutter recording, additional halogen or tungsten light should be provided. Fluorescent light will degrade the picture quality.
- For effective operation, this feature requires ample light. More light is required for the fastest shutter speed.
- The Auto Focus system may not operate properly under insufficient light when you are using the High Speed Shutter.

Re-Recording (P.23)

- Source tapes recorded on other VCRs must be pre-recorded in SP or SLP mode for Palmcorder playback.
- For technical reasons, dubbing a tape may reduce its quality.

CCD Warning

When your Palmcorder is aimed at a scene which contains an excessively bright object such as the sun or other bright lighting, a vertical bar may appear in the picture. This is a characteristic of the CCD pick-up device and is normal when using your Palmcorder. Try to avoid aiming the camera directly at extremely bright objects.

CATV System Installer

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC in USA (and to the Canadian Electrical code in Canada) that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Notes on Operations (continued)

Rough Values of Brightness

Your Palmcorder has been designed for normal scene illumination of 150 footcandles (1500 lux). However, the Palmcorder may be used at F1.4,

if illumination is more than 0.3 footcandles (3 lux). The table below shows the approximate values of brightness for reference.

PALMCORDER SETTINGS	NATURAL LIGHT CONDITIONS	KELVIN COLOR TEMPERATURE	ARTIFICIAL LIGHT SOURCE	COLOR TINT MIXTURE
	<ul style="list-style-type: none"> • Fair weather, blue sky 	10,000	<ul style="list-style-type: none"> • Color television 	Bluish
	<ul style="list-style-type: none"> • Slightly cloudy sky • Cloudy or rainy sky 	8,000 7,000		
	<ul style="list-style-type: none"> • Sunlight in clear weather at midday 	6,500 6,000	<ul style="list-style-type: none"> • Fluorescent lamp (Daylight) • Camera flash bulb 	
	<ul style="list-style-type: none"> • Average sunlight in clear weather 	5,500 5,000	<ul style="list-style-type: none"> • Blue lamp for photography 	
	<ul style="list-style-type: none"> • Sunlight 2 hours after sunrise and before sunset 	4,500 4,000	<ul style="list-style-type: none"> • Fluorescent lamp (White) • Normal flash bulb 	Whitish
		3,500	<ul style="list-style-type: none"> • Fluorescent lamp (Off-white) • Tungsten lamp for photography 	
	<ul style="list-style-type: none"> • Sunlight 40 min. after sunrise and before sunset 	3,200	<ul style="list-style-type: none"> • Halogen lamp • Iodine lamp 	
	<ul style="list-style-type: none"> • Sunlight 30 min. after sunrise and before sunset 	2,800	<ul style="list-style-type: none"> • Tungsten lamp 	Yellowish
	<ul style="list-style-type: none"> • Sunlight 20 min. after sunrise and before sunset 		<ul style="list-style-type: none"> • Acetylene lamp • Kerosene lamp 	
		2,000	<ul style="list-style-type: none"> • Candlelight 	Reddish

This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications set forth in Subpart J of Part 15 of the FCC Rules. If this equipment does cause interference to radio

or television reception which can be determined by turning the equipment on and off, use the equipment in another location and/or utilize an electrical outlet different from that used by the receiver.

Before Requesting Service

If you have a problem with your Palmcorder, it may be a minor one that you can correct yourself. Use the chart below in case your problem is listed, and then follow the recommendations.

Troubles	Corrections
No power ...	<ul style="list-style-type: none">• Make sure the Power Source is connected. (P.10)• Make sure the VCR/OFF/Camera Selector switch set to "VCR" or "CAMERA". (P.14, 15)• Check the Dew Indicator. (P.13)• Make sure the battery is fully charged. (P.11)• Make sure all necessary cables are connected correctly and firmly. (P.16)• Make sure the Lens Cap is OFF. (P.5)
Video cassette can't be inserted ...	<ul style="list-style-type: none">• Make sure the Power Source is connected. (P.10)• Insert the cassette with the window side facing out and the record tab facing up. (P.12)
Video cassette can't be removed ...	<ul style="list-style-type: none">• Make sure the Power Source is connected. (P.10)
No operation starts when operation buttons are pressed ...	<ul style="list-style-type: none">• Check the Dew Indicator. (P.13)
Recording does not operate ...	<ul style="list-style-type: none">• Make sure the record tab is still intact. (P.12)• Check the Battery Indicator. (P.13)• Check the Dew Indicator. (P.13)
Auto Focus does not operate ...	<ul style="list-style-type: none">• Make sure the Focus button is set to Auto. (P.20)• Make sure the VCR/OFF/CAMERA Selector switch is set to "CAMERA". (P.14)
The sound from microphone can't be monitored ...	<ul style="list-style-type: none">• Make sure the unit is set to REC or Record/Pause mode.

Before Requesting Service (continued)

Troubles	Corrections
Camera picture is too dark ...	•Make sure the High Speed Shutter button is OFF. (P.22)
No playback picture, or the playback picture is noisy or contains streaks ...	•Press the Set or Select button (Tracking Control). (P.15)
During playback, the picture indicates motion or blurred action ...	•Portions of the still picture where the normal speed motion was particularly rapid may produce this effect. This is normal.
If the top of your playback picture waves back and forth excessively ...	•Because the playback signal is not as stable as an off the air TV signal, the top of your TV screen may be bent or unstable when the tape is played back. This symptom is more noticeable when a pre-recorded tape, recorded on another VCR, is played back. To solve this problem, locate the horizontal hold control on your TV. Turn it slowly to correct the wavy picture. If your TV does not have the horizontal hold control or adjusting the control does not help, some modifications may have to be made to the TV set. Technically this is called "Horizontal AFC time constant change." If such a problem is noticed, please contact your local TV service center. (Some nominal service charges are required.)

Cleaning Care for Video Heads



Clogged Video Head

(a) Video Head Cleaning:

Your Palmcorder will not normally require head cleaning; however, it is possible that the heads may become clogged when playing an old or damaged tape. If the image on your screen resembles the photograph on the left, while playing back a tape, the heads may require cleaning.

(b) Cleaning the Heads: It is recommended that head cleaning be performed by a qualified service technician. Please contact your nearest Panasonic Service Center. An alternate solution is to obtain a head cleaning cassette. There are many types of cleaning cassettes, so be sure to follow the cleaning instructions carefully. Excessive use of the cleaning cassette could shorten head life. Use this cassette only when a head clogging symptom occurs.

Refer servicing to qualified service personnel.

Specifications

Power Source:	Compact VHS Palmcorder: DC 6V AC Adaptor: 110/120/220/240V AC, 50/60 Hz
Power Consumption:	Compact VHS Palmcorder: 6V DC 9W AC Adaptor: 20 W
Video Signal:	EIA Standard (525 lines, 60 fields) NTSC color signal
Video Recording System:	4 rotary heads, helical scanning system
Audio Track:	1 track
Pick-Up System:	Sequential color difference, field reverse system
Pick-Up Device:	One integral color filter Charge Coupled Device (CCD)
Lens:	6:1 zoom lens, f1.4 with auto iris control Focal length: 6.7mm - 40mm Power zoom function Lens filter diameter: 27mm
Viewfinder:	2/3 inch Electronic Viewfinder
Minimum Illumination Required:	3 Lux (F1.4) 0.3 footcandles
External Microphone Input Level:	—70dB, 4.7K ohms unbalanced, M3 connector
Operating Temperature:	32°F~104°F (0°C~40°C)
Operating Humidity:	10%~75%
Weight:	Compact VHS Palmcorder: 1.7 lbs. AC Adaptor: 0.95 lbs.
Dimensions:	Compact VHS Palmcorder: 3-3/4" (W) × 5-5/16" (H) × 6-3/16" (D) 95 (W) × 134 (H) × 157 (D) mm AC Adaptor: 2-3/4" (W) × 2" (H) × 7-1/16" (D) 70 (W) × 51 (H) × 179 (D) mm

Weight and dimensions shown are approximate.

Designs and specifications are subject to change without notice.

Service

in the **U.S.A.**

MATSUSHITA SERVICES
COMPANY DIVISION OF MATSUSHITA
ELECTRIC CORP OF AMERICA
(MSC)

in **PUERTO RICO**

PANASONIC SALES COMPANY,
DIVISION OF MATSUSHITA ELECTRIC
OF PUERTO RICO, INC.
(PSC)

Your product is designed and manufactured to ensure a minimum of maintenance. However, should your unit ever require service, a nationwide system of FACTORY SERVICENTERS and AUTHORIZED INDEPENDENT SERVICENTERS is maintained to support your product's warranty.

To locate an Authorized Servicenter in your area with the U.S.A.

DIAL TOLL FREE: 1-800-447-4700

24 Hours a Day, 7 Days a Week

Service in the U.S.A.... Factory Servicers

MATSUSHITA SERVICES COMPANY

Division of Matsushita Electric Corporation of America
50 Meadowland Parkway, Secaucus, New Jersey 07094

ALABAMA

2523-5th Avenue,
South Birmingham,
AL 35233
205-252-4195

ARIZONA

9332 North 95th Way
Suite 101
Scottsdale, AZ 85258
602-860-6777

CALIFORNIA

6550 Katella Avenue
Cypress, CA 90630
714-733-7426

930 South Mt. Vernon Avenue
Colton, CA 92324
714-825-3110

800 Dubuque Avenue
So. San Francisco,
CA 94080
415-871-6373

20201 Sherman Way
Suite 102
Canoga Park, CA 91306
818-709-1775

3878 Ruffin Road
Suite A
San Diego, CA 92123
619-560-9200

COLORADO

1640 South Abilene
Aurora, CO 80012
303-752-2024

FLORIDA

4115 W. Kennedy
Boulevard
Tampa, FL 33609
813-289-9726

GEORGIA

4245 International Blvd.
Suite C
Norcross, GA 30093
404-925-6880

1575 Northside Drive
Suite 325
Atlanta, GA 30318
404-351-8978
(carry-in service only)

HAWAII

99-859 Iwaiwa Street,
P.O. Box 774
Honolulu, Hawaii
96808-0774
808-488-1996

ILLINOIS

425 E. Algonquin Road
Arlington Heights, IL 60005
312-981-4840

MARYLAND

Sulphur Spring Business Park
1638 Sulphur Spring Road
Baltimore, MD 21227
301-242-2607

MASSACHUSETTS

385 University Avenue
Westwood, MA 02090
617-329-4280

MINNESOTA

7850-12th Avenue, South
Airport Business Center
Bloomington, MN 55420
612-854-8624

MISSOURI

13711 Rider Trail North
Earth City, MO 63045
314-739-5301

OHIO

1196 W. Kemper RD
Cincinnati, OH 45240
513-851-4180

PENNSYLVANIA

2250 Cabot Blvd., West
Langhorne, PA 19047
215-741-0661

4986 Library Road, Rt. 88
Hillcrest Shopping Center
Bethel Park, PA 15102
412-343-0555

TENNESSEE

925-8th Avenue, South
Nashville, TN 37203
615-244-4434

TEXAS

7420 Harwin Drive
Houston, TX 77036
713-781-1528

4500 Amon Carter Blvd.
Fort Worth, TX 76155
817-685-1060

WASHINGTON

20425-84th Ave., South
Kent, WA 98032
206-872-7922

As of Feb '90

Consumers requiring assistance with service matters should contact the appropriate Regional Administration Office:

NORTHEAST

2250 Cabot Blvd., West
Langhorne, PA 19047
(215) 741-0676

Covers:

CT, DE, ME, MD, MA,
NH, NJ, NY, PA, RI, VT,
VA, DC, WV, East OH

MIDWEST

425 East Algonquin Road
Arlington Heights, IL 60005
(708) 981-4842

Covers:

IL, IN, IA, KS, KY, MI,
MN, MO, NE, ND, SD,
West OH, WI

WESTERN

6550 Katella Avenue
Cypress, CA 90630
(714) 373-7440

Covers:

AK, AZ, CA, CO, HI, ID,
MT, NV, NM, OR, UT,
WA, WY

SOUTHERN

1854 Shackelford Court,
Suite 105 Norcross, GA 30093
(404) 925-6860

Covers:

AL, AR, FL, GA, LA,
MS, NC, SC, TN, TX,
OK

Consumers requiring product information or operating assistance with a consumer product should contact:

CONSUMER AFFAIRS DEPARTMENT 2F-3
50 Meadowland Parkway Secaucus, N.J. 07094 (201) 348-9090

Warranty

PANASONIC COMPANY, DIVISION OF
MATSUSHITA ELECTRIC CORPORATION
OF AMERICA ("PANASONIC COMPANY")
1 Panasonic Way
Secaucus, New Jersey 07094

PANASONIC SALES COMPANY, DIVISION
OF MATSUSHITA ELECTRIC OF PUERTO
RICO, INC. ("PSC")
San Gabriel Industrial Park
65th Infantry Avenue KM 9.5
Carolina, Puerto Rico 00630

PANASONIC Video Equipment Limited Warranty

Panasonic Company or Panasonic Sales Company (collectively referred to as "Panasonic") will repair this product, free of charge in the U.S.A. or Puerto Rico in the event of a defect in materials or workmanship as follows:

Parts (Except camera pick-up tube/CCD Image Sensor)
New or rebuilt parts in exchange for defective parts for one (1) year from the date of original purchase.

Camera Pick-Up Tube/CCD Image Sensor
New pick-up tube/CCD Image Sensor in exchange for defective pick-up tube/CCD Image Sensor for six (6) months from the date of original purchase.

Batteries (If included)
New rechargeable batteries in exchange for defective rechargeable batteries for ten (10) days from the date of original purchase. Non-rechargeable batteries are not warranted.

Tape (If included)
New video cassette tape in exchange for a defective video cassette tape for five (5) days from the date of original purchase.

Labor
Carry-in or mail-in service for ninety (90) days from the date of original purchase. After the labor warranty period is over, purchaser pays for all labor charges for removal and installation of parts and camera pick-up tube/CCD Image Sensor.
Carry-in or mail-in service in the continental U.S.A. can be obtained during the warranty period from a Matsushita Services Company (MSC) Factory Servicenter listed in the Servicenter Directory. Or call 800-447-4700, toll free, to locate an Authorized MSC Servicenter. Carry-in or mail-in service in Puerto Rico can be obtained during the warranty period by calling the telephone numbers listed in the Servicenter Directory. This warranty is extended only to the original purchaser. A purchase receipt or other proof of date of original purchase will be required before warranty performance is rendered.

This warranty only covers failures due to defects in materials or workmanship which occur during normal use and does not cover normal maintenance, including, but not limited to, video and audio head cleaning. It does not cover damage which occurs in shipment or failures which are caused by products not supplied by Panasonic or failures which result from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, improper antenna, inadequate signal pick-up, maladjustment of consumer controls, line power surge, modification or commercial use, such as hotel, office, restaurant, or other business or rental use of the product or service by anyone other than an MSC Factory Servicenter or Authorized MSC Servicenter or damage that is attributable to acts of God.

LIMITS AND EXCLUSIONS

There are no express warranties except as listed above. PANASONIC SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS, OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the Consumer Affairs Division at the company address indicated above.

If you ship the product

Carefully pack and send it prepaid, adequately insured and preferably in the original carton. Attach a postage-affixed letter, detailing the complaint, to the outside of the carton.

DO NOT send the product to the Executive or Regional Sales offices. They are NOT equipped to make repairs.

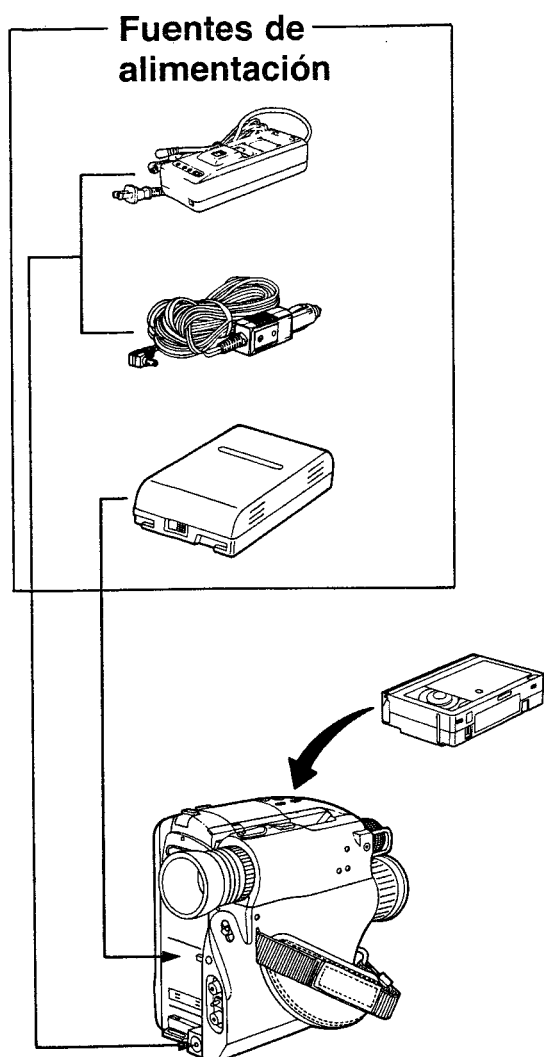
Service in Puerto Rico

MATSUSHITA ELECTRIC OF PUERTO RICO, INC.
Panasonic Sales Company/Factory Servicenter
San Gabriel Industrial Park
65th Infantry Avenue KM 9.5
Carolina, Puerto Rico 00630
(809) 750-5135

Spanish Quick Use Guide/Guía Para Uso Rápido

PREPARATIVOS

- Conectar la videocámara a una fuente de alimentación (batería, adaptador de CA, adaptador de CA enchufable o cable para batería de coche).
- Encender el aparato.
- Introducir el casete en el compartimiento de casetes.

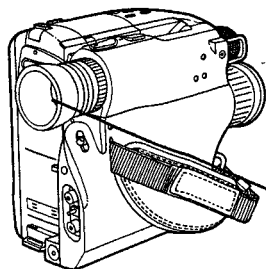


FUNCIONAMIENTO

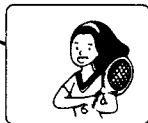
- 1 Conmutar la palanca selectora (VCR/OFF/CAMERA) a la posición "CAMERA".
- 2 Seleccionar la velocidad de grabación (si su videocámara tiene un selector de velocidad de cinta "TAPE SPEED").
- 3 Conmutar el selector de equilibrio del blanco (WHITE BALANCE) a la posición "AUTO" cuando la luminosidad ambiental es la normal.
- 4 Conmutar el interruptor de enfoque (FOCUS) a la posición "AUTO".
- 5 Oprimir el botón de grabación/pausa (RECORD/PAUSE) para comenzar a filmar.
- 6 Volver a oprimir el botón de grabación/pausa (RECORD/PAUSE) cuando se desea hacer una pausa en la grabación.

Spanish Quick Use Guide/Guía Para Uso Rápido (continued)

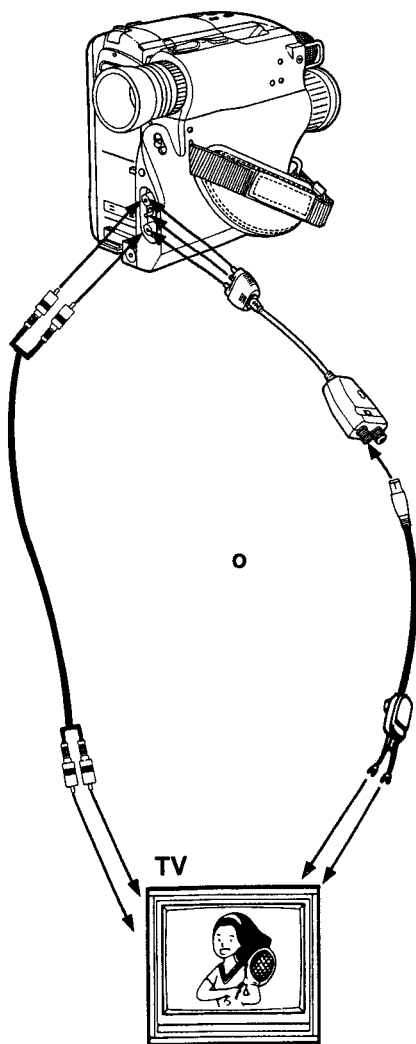
- En el visor -



Visor electrónico



- En la TV -



PREPARATIVOS

- Conectar la videocámara a una fuente de alimentación (batería, adaptador de CA, adaptador de CA enchufable o cable para batería de coche).
- Encender el aparato.
- Introducir el casete en el compartimiento de casetes.

FUNCIONAMIENTO

- 1 Conmutar la palanca selectora (VCR/OFF/CAMERA) a la posición "VCR".
- 2 Rebobinar la cinta con el botón de rebobinado (REWIND) (si fuera necesario).
- 3 Oprimir el botón de reproducción (PLAY) para que aparezcan las imágenes en la pantalla.
- 4 Oprimir el botón de parada (STOP) cuando se desea parar la reproducción.

REPRODUCCION CON EFECTOS ESPECIALES

PARA LOCALIZAR RAPIDAMENTE UNA ESCENA ESPECIFICA

- Oprimir el botón de localización (SEARCH).

PARA CONGELAR UNA IMAGEN

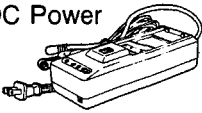
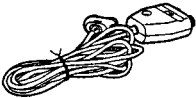
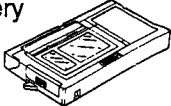
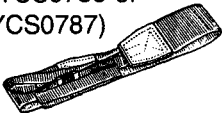




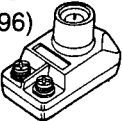
- Oprimir el botón de pausa/imagen fija (PAUSE/STILL).
- Oprimir nuevamente el botón cuando se desea continuar reproduciendo.

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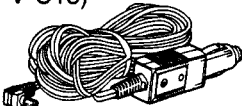
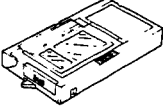
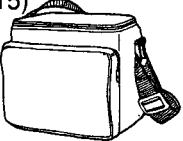
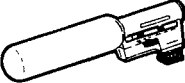
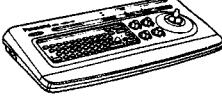
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Accessories

Accessories packed with your Compact VHS Palmcorder

1 pc. AC Adaptor (PV-A15) with DC Power Cable 	1 pc. RF Adaptor (PV-RF15) 
1 pc. VHS PlayPak (PV-P1) and one "AA" battery 	1 pc. Shoulder Strap (VYCS0786 or VYCS0787) 
1 pc. Battery Pack (PV-BP15) 	1 pc. CR2032 Clock Battery (VSBS0007) 
1 pc. Audio/Video Cable (VJPS0216 or VJPS0337) 	1 pc. VHF Connecting Cable (VSQS0217) 
1 pc. 300ohm-75ohm Transformer (VSQS0496) 	

Optional Accessories

Compact Video Cassette Tape (NV-TC20P) (NV-TC30P) 	AC Adaptor (PV-A15) 
Battery Pack (PV-BP15 or PV-BP17) 	Car Battery Cord (PV-C15) 
VHS PlayPak (PV-P1) 	System Carrying Case (PV-H15) 
Super Directional Microphone (PV-MK40) 	Video Corrector (PV-CC50) 

Panasonic®

Panasonic Company
Division of Matsushita Electric
Corporation of America
One Panasonic Way, Secaucus,
New Jersey 07094

Panasonic Sales Company,
Division of Matsushita Electric
of Puerto Rico, Inc.
San Gabriel Industrial Park
65th Infantry Avenue KM 9.5
Carolina, Puerto Rico 00630

Printed in Japan
VQTS2298 Ⓢ



	ACCESSORY #	DESCRIPTION	PRICE
	PV-A11	AC Adaptor	\$130.00
	PV-A15	AC Adaptor	\$130.00
	PV-A23	AC Adaptor	\$190.00
	PV-BP11	Battery Pack	\$45.00
	PV-BP12	Battery Pack	\$50.00
	PV-BP15	Battery Pack	\$45.00
	PV-BP17	Battery Pack	\$50.00
	PV-BP50	Battery Pack	\$60.00
	PV-BP88	Battery Pack	\$60.00
	PV-C10	Car Cord	\$70.00
	PV-C15	Car Cord	\$70.00
	PV-C20M	Car Cord	\$30.00
	PV-C80	Car Cord	\$25.00
	PV-EC1	Synchro Edit Cable	\$10.00
	PV-ES20	S-VHS Cable (20 ft.)	\$25.00
	PV-LT49	Telephoto Lens 49 mm (1.4 x)	\$99.00
	PV-LW49	Wideangle Lens 49 mm (0.7 x)	\$99.00
	PV-G40	Character Generator	\$220.00
	PV-H10	Soft Sided Carrying Case	\$45.00
	PV-H15	Soft Sided Carrying Case	\$40.00
	PV-H50M	Hard Sided Carrying Case	\$100.00
	PV-H60M	Hard Sided Carrying Case	\$100.00
	VSQW0001	Remote Control	\$10.00
	PV-P1	VHS PlayPak (Cassette Adaptor)	\$70.00
	PV-MK40	Super Directional Microphone	\$120.00
	PV-TA42	Tuner Adaptor	\$190.00
	PV-CC50	Video Color Corrector	\$399.00
OMNIMOVIE/ PALMCORDER #			
PV-10		X	
PV-20		X	
PV-40		X	
PV-50	X		X
PV-100	X		X
PV-110	X	X	X
PV-120	X	X	X
PV-122	X	X	X
PV-S140	X	X	X
PV-S150	X	X	X
PV-S160	X	X	X
PV-500		X	X
PV-502		X	X
PV-510		X	X
PV-520		X	X
PV-530		X	X
PV-535		X	X
PV-S540		X	X
PV-S550		X	X
PV-S575		X	X
PV-602		X	X
PV-604		X	X
PV-605S		X	X
PV-615S		X	X
PV-610		X	X
PV-640		X	X
PV-660		X	X

Prices quoted are subject to change without notice and will expire July 1, 1992.

After July 1, 1992, please call 800-332-5368 for current prices.

Printed in Japan
VQAS0248 ©

☆☆ SEE REVERSE SIDE FOR ORDERING DETAILS ☆☆ THANK YOU FOR YOUR ORDER ☆☆

PANASONIC OMNIMOVIE/PALMCORDER ACCESSORY ORDER FORM

1. OmniMovie/Palmcorder Model # _____

2. Items Ordered

Accessory #	Description	Price Each	Quantity	Total Price
Subtotal				
Your State & Local Sales Tax				
Shipping & Handling				4.00
Total Enclosed				

3. Method of payment (check one)

☐ Check or Money Order enclosed (NO C.O.D. SHIPMENTS)

☐ VISA Credit Card # _____

☐ MasterCard Expiration Date _____

☐ Discover Customer Signature _____

Send Check or Money Order to: MATSUSHITA ACCESSORIES

20421 84th Ave. South

Kent, WA 98302

(Please do not send cash)

4. Shipping information (UPS delivery requires complete street address)

Ship To:

Mr.

Mrs.

Ms. _____

First

Last

Street Address _____

Phone #:

Day () _____

City _____ State _____ Zip _____

Night () _____

TO OBTAIN ANY OF OUR OMNIMOVIE/PALMCORDER ACCESSORIES YOU CAN DO ANY OF THE FOLLOWING:
VISIT YOUR LOCAL PANASONIC DEALER

OR

LOCATE YOUR AUTHORIZED ACCESSORY STOCKING DISTRIBUTOR AT 1-800-447-4700

OR

CALL PANASONIC'S ACCESSORY ORDER LINE AT 1-800-332-5368

OR

MAIL THIS ORDER FORM TO:
MATSUSHITA SERVICES COMPANY
ACCESSORY SALES DEPT.
20421 84th AVENUE SOUTH
KENT, WA, 98032

Seal card here.

Panasonic® VCR PURCHASE INFORMATION CARD

IMPORTANT! IMPORTANT!

Please fill out and return within the next 10 days.

Thank you for purchasing this Panasonic product. In order to serve you better in the future, we would appreciate your answering the following questions. Your assistance is greatly appreciated.

1 ☐ Mr. ☐ Mrs. ☐ Ms. ☐ Miss 90N

First Name _____ Initial _____ Last Name _____

Street _____ Apt. No. _____

City _____ State _____ Zip _____

2 Date of Purchase. _____
Month Day Year

3 What is your model number? PV — _____
(Located in Operating Instructions Manual and Bottom Panel of Product)

4 Type of store where purchased:

1. <input type="checkbox"/> Received as a Gift	7. <input type="checkbox"/> Supermarket
2. <input type="checkbox"/> Department Store	8. <input type="checkbox"/> Catalog Showroom
3. <input type="checkbox"/> Appliance/Radio/TV	9. <input type="checkbox"/> Membership Warehouse
4. <input type="checkbox"/> Discount Store/ Mass Merchandise	10. <input type="checkbox"/> Camera Store
5. <input type="checkbox"/> Video Speciality	11. <input type="checkbox"/> Computer Store
6. <input type="checkbox"/> Hi-Fi Store	12. <input type="checkbox"/> Catalog Mail Order
	13. <input type="checkbox"/> Other: _____

5 Check the two (2) most important factors influencing your selection of this product:

1. <input type="checkbox"/> Trust in Panasonic	7. <input type="checkbox"/> Ease of Operation
2. <input type="checkbox"/> Price	8. <input type="checkbox"/> Design
3. <input type="checkbox"/> Quality	9. <input type="checkbox"/> Size
4. <input type="checkbox"/> VHS Format	10. <input type="checkbox"/> Durability
5. <input type="checkbox"/> Features	11. <input type="checkbox"/> Portability
6. <input type="checkbox"/> Style/Appearance	12. <input type="checkbox"/> Other: _____

6 Which of the following brands did you seriously consider before selecting Panasonic? (check all that apply)

1. <input type="checkbox"/> Considered no other brand	8. <input type="checkbox"/> Sanyo
2. <input type="checkbox"/> Magnavox	9. <input type="checkbox"/> G.E.
3. <input type="checkbox"/> Fisher	10. <input type="checkbox"/> JVC
4. <input type="checkbox"/> Sony	11. <input type="checkbox"/> Sharp
5. <input type="checkbox"/> Quasar	12. <input type="checkbox"/> Zenith
6. <input type="checkbox"/> RCA	13. <input type="checkbox"/> Toshiba
7. <input type="checkbox"/> Hitachi	14. <input type="checkbox"/> Other: _____

7 How did you first learn of this product? (check one)

1. <input type="checkbox"/> Magazine Advertisement	5. <input type="checkbox"/> Direct Mail
2. <input type="checkbox"/> Newspaper Advertisement	6. <input type="checkbox"/> In-Store Display
3. <input type="checkbox"/> Television Advertisement	7. <input type="checkbox"/> Friend's Recommendation
4. <input type="checkbox"/> Radio Advertisement	8. <input type="checkbox"/> Salesperson's Recommendation
	9. <input type="checkbox"/> Other: _____

8 What type of recording is the product primarily used for and who is(are) the primary user(s)? (check one from each column)

A. 1. <input type="checkbox"/> Child's Activities	B. 1. <input type="checkbox"/> Yourself
2. <input type="checkbox"/> Professional Sporting Events	2. <input type="checkbox"/> Spouse
3. <input type="checkbox"/> Vacation	3. <input type="checkbox"/> You and Spouse
4. <input type="checkbox"/> Weddings/Family Gatherings, etc.	4. <input type="checkbox"/> Children
5. <input type="checkbox"/> Educational	5. <input type="checkbox"/> Other
6. <input type="checkbox"/> Recreational	
7. <input type="checkbox"/> Other	

9 Date of birth of person whose name appears above:

____ 1 9 ____
Month Year

10 Marital Status:

1. <input type="checkbox"/> Married	3. <input type="checkbox"/> Widowed
2. <input type="checkbox"/> Divorced/Separated	4. <input type="checkbox"/> Single/Never Married

11 Occupation:

	You	Your Spouse
Homemaker	1. <input type="checkbox"/>	1. <input type="checkbox"/>
Professional/Technical	2. <input type="checkbox"/>	2. <input type="checkbox"/>
Executive/Administrator	3. <input type="checkbox"/>	3. <input type="checkbox"/>
Middle Management	4. <input type="checkbox"/>	4. <input type="checkbox"/>
Sales/Marketing	5. <input type="checkbox"/>	5. <input type="checkbox"/>
Clerical or Service Worker	6. <input type="checkbox"/>	6. <input type="checkbox"/>
Tradesman/Machine Oper./Laborer	7. <input type="checkbox"/>	7. <input type="checkbox"/>
Retired	8. <input type="checkbox"/>	8. <input type="checkbox"/>
Student	9. <input type="checkbox"/>	9. <input type="checkbox"/>
Self Employed/Business Owner	10. <input type="checkbox"/>	10. <input type="checkbox"/>

12 What are the ages of all children living at home?

☐ None ☐ 4 yrs. ☐ 9 yrs. ☐ 14 yrs. ☐ 19 +
☐ Under 1 ☐ 5 yrs. ☐ 10 yrs. ☐ 15 yrs.
☐ 1 yr. ☐ 6 yrs. ☐ 11 yrs. ☐ 16 yrs.
☐ 2 yrs. ☐ 7 yrs. ☐ 12 yrs. ☐ 17 yrs.
☐ 3 yrs. ☐ 8 yrs. ☐ 13 yrs. ☐ 18 yrs.

13 Which group describes your annual family income:

1. <input type="checkbox"/> Under \$14,999	7. <input type="checkbox"/> \$40,000-\$44,999
2. <input type="checkbox"/> \$15,000-\$19,999	8. <input type="checkbox"/> \$45,000-\$49,999
3. <input type="checkbox"/> \$20,000-\$24,999	9. <input type="checkbox"/> \$50,000-\$59,999
4. <input type="checkbox"/> \$25,000-\$29,999	10. <input type="checkbox"/> \$60,000-\$74,999
5. <input type="checkbox"/> \$30,000-\$34,999	11. <input type="checkbox"/> \$75,000-\$99,999
6. <input type="checkbox"/> \$35,000-\$39,999	12. <input type="checkbox"/> \$100,000 & over

14 Which of the following do you use regularly?

1. <input type="checkbox"/> American Express, Diners Club, Carte Blanche
2. <input type="checkbox"/> Bank credit card (Master Card, Visa)
3. <input type="checkbox"/> Gas, Dept. store, etc. credit card(s)
4. <input type="checkbox"/> Airline club/frequent flyer program
5. <input type="checkbox"/> None of the above

15 For your primary residence, do you:

1. <input type="checkbox"/> Own a house?
2. <input type="checkbox"/> Rent a house?
3. <input type="checkbox"/> Rent an apartment?
4. <input type="checkbox"/> Own a townhouse or condominium?

(PLEASE CONTINUE ON BACK!) (OVER)

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VQAS0223 Ⓐ

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Moisten here to seal. Do not staple.


PLACE
FIRST-CLASS
STAMP
HERE

Panasonic®
P.O. Box 171081
Denver, Colorado 80217-1081

MARKET RESEARCH DEPARTMENT
Please do not send any products or correspondence to this address.

90N

Please fold here.

 **16** To help us understand our customers' lifestyles, please indicate the interests and activities in which you or your spouse enjoy participating on a regular basis:
(CONTINUE HERE)

- | | | |
|---|---|--|
| 1. <input type="checkbox"/> Bicycling Frequently | 20. <input type="checkbox"/> Automotive Work | 39. <input type="checkbox"/> Coin/Stamp Collecting |
| 2. <input type="checkbox"/> Golf | 21. <input type="checkbox"/> Electronics | 40. <input type="checkbox"/> Collectibles/Collections |
| 3. <input type="checkbox"/> Physical Fitness/Exercise | 22. <input type="checkbox"/> Home Workshop/Do it Yourself | 41. <input type="checkbox"/> Our Nation's Heritage |
| 4. <input type="checkbox"/> Running/Jogging | 23. <input type="checkbox"/> Motorcycles | 42. <input type="checkbox"/> Real Estate Investments |
| 5. <input type="checkbox"/> Snow Skiing Frequently | 24. <input type="checkbox"/> Recreational Vehicles | 43. <input type="checkbox"/> Stock/Bond Investments |
| 6. <input type="checkbox"/> Tennis Frequently | 25. <input type="checkbox"/> Stereo, Records/Tapes/Discs | 44. <input type="checkbox"/> Veterans Benefits |
| 7. <input type="checkbox"/> Bowling | 26. <input type="checkbox"/> Avid Book Reading | 45. <input type="checkbox"/> Entering Sweepstakes |
| 8. <input type="checkbox"/> Camping/Hiking | 27. <input type="checkbox"/> Bible/Devotional Reading | 46. <input type="checkbox"/> Home Video Games |
| 9. <input type="checkbox"/> Fishing Frequently | 28. <input type="checkbox"/> Current Affairs/Politics | 47. <input type="checkbox"/> Household Pets (dogs, cats, etc.) |
| 10. <input type="checkbox"/> Hunting/Shooting | 29. <input type="checkbox"/> Health Foods/Vitamins | 48. <input type="checkbox"/> Money Making Opportunities |
| 11. <input type="checkbox"/> Power Boating | 30. <input type="checkbox"/> House Plants | 49. <input type="checkbox"/> Science Fiction |
| 12. <input type="checkbox"/> Sailing | 31. <input type="checkbox"/> Photography | 50. <input type="checkbox"/> Wildlife/Environment Issues |
| 13. <input type="checkbox"/> Crafts | 32. <input type="checkbox"/> Attend Cultural/Arts Events | 51. <input type="checkbox"/> Career-Oriented Activities |
| 14. <input type="checkbox"/> Crossword Puzzles | 33. <input type="checkbox"/> Charities/Volunteer Activities | 52. <input type="checkbox"/> Personal/Home Computers |
| 15. <input type="checkbox"/> Grandchildren | 34. <input type="checkbox"/> Fashion Clothing | 53. <input type="checkbox"/> Science/New Technology |
| 16. <input type="checkbox"/> Needlework/Knitting | 35. <input type="checkbox"/> Fine Art/Antiques | 54. <input type="checkbox"/> Self Improvement |
| 17. <input type="checkbox"/> Outdoor Gardening | 36. <input type="checkbox"/> Foreign Travel | 55. <input type="checkbox"/> VCR Recording/Viewing |
| 18. <input type="checkbox"/> Sewing | 37. <input type="checkbox"/> Gourmet Cooking/Fine Foods | 56. <input type="checkbox"/> Watching Cable TV |
| 19. <input type="checkbox"/> Walking for Health | 38. <input type="checkbox"/> Wines | 57. <input type="checkbox"/> Watching Sports on TV |
| | | 58. <input type="checkbox"/> NONE OF THE ABOVE |

From the above list, please indicate the numbers representing the 3 most important activities for:

You Spouse

Thanks for taking the time to fill out this questionnaire. Your answers will be used for market research studies and reports — and will help us better serve you in the future. They will also allow you to receive important mailings and special offers from a number of fine companies whose products and services relate directly to the specific interests, hobbies, and other information indicated above. Through this selective program, you will be able to obtain more information about activities in which you are involved and less about those in which you are not. Please check here, if for some reason, you would prefer **not** to participate in this opportunity. ☐

IMPORTANT SAFEGUARDS AND PRECAUTIONS . . . 1 - 2 **BASIC GUIDE FOR MOVIE SHOOTING 3 - 8**

IMPORTANT SAFEGUARDS AND PRECAUTIONS

1. Read Instructions – All the safety and operating instructions should be read before the unit is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the unit and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and maintenance instructions should be followed.
5. Cleaning – Unplug this video unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a dry cloth for cleaning.
6. Attachments – Do not use attachments not recommended by the video product manufacturer as they may be hazardous.
7. Water and Moisture – Do not use this video unit near water – for example near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
8. Accessories – Do not place this video unit on an unstable cart, stand, tripod, bracket, or table. The video unit may fall, causing serious injury to a child or adult, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video unit. Any mounting of the unit should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



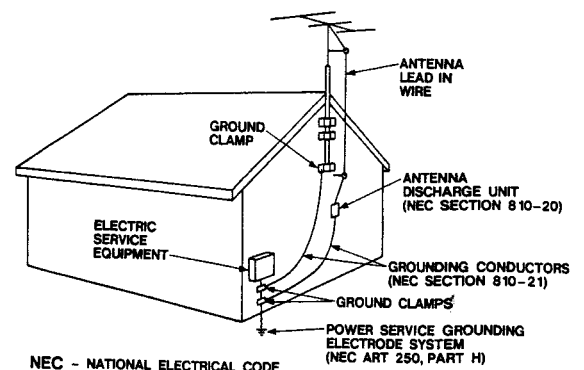
9. Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the video unit and to protect it from overheating. These openings must not be blocked or covered. Never place the video unit on a bed, sofa, rug, or other similar surface, or near or over a radiator or heat register. This video unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. Power Sources – This video unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For video units intended to be operated from battery power, or other sources, refer to the operating instructions.

11. Grounding or Polarization – This video unit may be equipped with either a polarized 2-wire AC (Alternating Current) line plug (a plug having one blade wider than the other) or 3-wire grounding type plug, a plug having a third (grounding) pin.

The 2-wire polarized plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords of plugs, convenience receptacles, and the point where they exit from the unit.
13. Outdoor Antenna Grounding – If an outside antenna or cable system is connected to the video unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Part 1 of the Canadian Electrical Code, in USA Section 810 of the National Electrical Code, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.



IMPORTANT SAFEGUARDS AND PRECAUTIONS

14. **Lightning** – For added protection of this video unit receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video unit due to lightning and power-line surges.
15. **Power Lines** – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
16. **Overloading** – Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
17. **Objects and Liquids** – Never push objects of any kind into this video unit through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind onto the video unit.
18. **Servicing** – Do not attempt to service this video unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. **Damage Requiring Service** – Unplug this video unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If any liquid has been spilled onto, or objects have fallen into the video unit.
 - c. If the video unit has been exposed to rain or water.
 - d. If the video unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video unit to its normal operation.
 - e. If the video unit has been dropped or the cabinet has been damaged.
 - f. When the video unit exhibits a distinct change in performance – this indicates a need for service.
20. **Replacement Parts** – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
21. **Safety Check** – Upon completion of any service or repairs to this video unit, ask the service technician to perform safety checks to determine that the video unit is in safe operating order.

PRECAUTIONS

USE & LOCATION

- **TO AVOID SHOCK HAZARD** ... Your Camcorder and power supply should not be exposed to rain or moisture. Do not connect the power supply or operate your Camcorder if it gets wet. Your Camcorder has been designed for outdoor use in all kinds of weather, however it will probably not survive any type of direct exposure to water, rain, sleet, snow, or a direct splashing from a pool or even a cup of coffee. Do not attempt to disassemble this unit. There are no user serviceable parts inside. Unplug your Camcorder from the power supply before cleaning.
- **DO NOT AIM YOUR CAMCORDER AT THE SUN OR OTHER BRIGHT OBJECTS**
- **DO NOT LEAVE YOUR CAMCORDER IN DIRECT SUNLIGHT** ... This action could permanently damage the internal parts of your Camcorder.
- **AVOID SUDDEN CHANGES IN TEMPERATURE** ... If the unit is suddenly moved from a cold place to a warm place, moisture may form on the tape and inside the unit.
- **DO NOT LEAVE YOUR CAMCORDER OR THE POWER SUPPLY TURNED ON WHEN NOT IN USE**
- **STORAGE OF YOUR CAMCORDER** ... Store and handle your Camcorder in a manner that will not subject it to unnecessary movement (avoid shaking and striking). Your Camcorder contains a sensitive pick-up device which could be damaged by improper handling or storage.

CARE

- **TO CLEAN YOUR CAMCORDER** ... Do not use strong or abrasive detergents when cleaning your Camcorder body.
- **TO PROTECT THE LENS** ... Do not touch the surface of the lens with your hand. Use a commercial camcorder lens solution and paper when cleaning the lens. Improper cleaning can scratch the lens coating.

BASIC GUIDE FOR CAMCORDER SHOOTING

EVENTS

Use your Camcorder to keep special family moments close to everyone for years to come. The various sights, sounds and incidents of the important expressive events in life can be recorded on video tape. Everyone will enjoy handling the Camcorder and children love to watch themselves on a TV screen. Video is fun for all of the family.

CHILDREN GROWING UP

Wouldn't it be interesting to see what you were like at age three? It could be a reality for your children. First words, first steps, first time off to school, there is nothing like video for bringing back all of those once-in-a-lifetime events. And when your children grow up and have children of their own you can give them a video copy of those special moments.



VIDEO LETTERS

Video is great way to keeping in touch with family and friends. The video advantage is that your friends and relatives can see you in their own homes. If you are far away from someone dear to you, you can shorten that distance with a video letter.



TRAVEL VIDEO

Your new Camcorder is so compact and lightweight that you can easily take it traveling. A video vacation is much more fun, you bring home your adventures as video entertainment for all to join in.

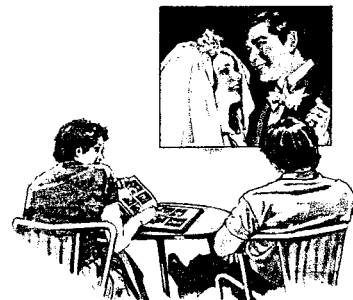


VALUABLE LEARNING AID

Musical instruments, golf, dance, tennis... the possibilities are unlimited. At home you can view your instructor's example as many times as you like. Set the Camcorder on a tripod and record your own performance for comparison. With video you will find how well your enjoyment is expressed.

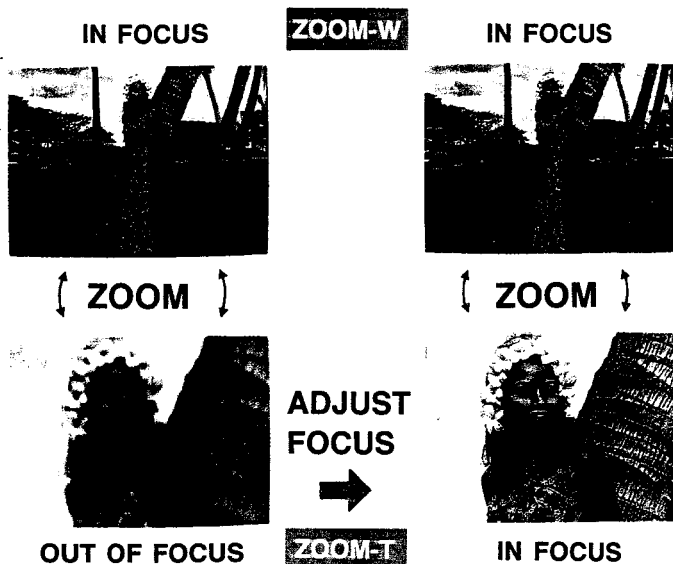
VIDEO ALBUM

Take your photo albums and turn them into video albums. Just use your Camcorder to record each photograph, in any order you want. Then, on TV, you can relate the situation and impressions to everyone at the same time.



BASIC GUIDE FOR CAMCORDER SHOOTING

A video camera may have excellent basic performance but it will not be very useful if it is not easy to operate. In the past, good video cameras required a fair degree of technical knowledge on the part of the user. Now, the Camcorder design offers you the ideal combination of outstanding performance and operating convenience. Simple convenient functions make it easy for anyone to achieve high quality results with just a little basic knowledge and practice. These functions also help prevent mistakes and take care of many adjustments automatically. Follow the recommended tips and habits of professional handling offered here and you will add to your recordings what your Camcorder is designed to give, professional results.

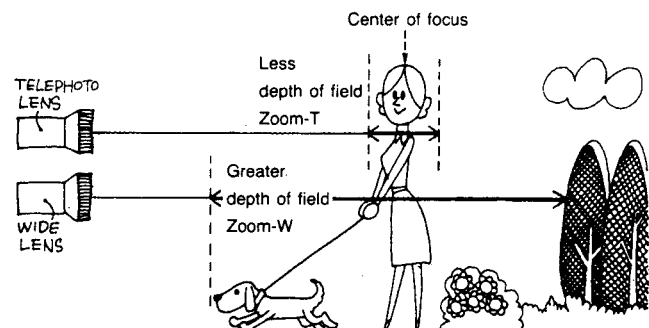


PROPER FOCUS

In the AUTO position the focus will be adjusted continuously. When not using the auto focus feature, you can adjust the focus by hand or press the Focus Switch while it is in the MANUAL position. Focus the Camcorder after setting the lens to the TELE (Zoom-T) position. When you focus the Camcorder you move the center of focus back and forth a certain distance from the Camcorder. Setting the focus in the TELE (Zoom-T) position allows you to see that the center of focus is at the place you will want to zoom-in. This not only makes it easier to adjust the focus, it also assures that you will stay in focus at any other zoom lens position.

DEPTH OF FIELD

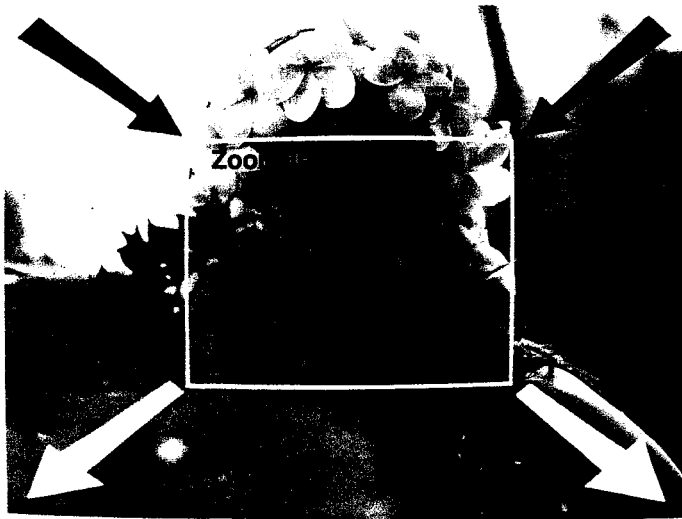
While you have the focus adjusted in the TELE (Zoom-T) position, you may notice that the distance is very short between objects in focus. This "Focal Length" distance is short from the front to the back of the picture at the center of the focus you have set with the focus feature. This is called a shallow "Depth of Field". Move the zoom lever slowly toward the WIDE (Zoom-W) position, for a deep "depth of field". The distance is greater between objects in focus. If you are following a moving subject, set the focusing ring to 5 m and set the zoom ring to the WIDE position. Then, as the subject moves, the Camcorder will usually have enough depth of field to keep their image in focus.



BASIC GUIDE FOR CAMCORDER SHOOTING

ZOOM LENS

Many people when first using a Camcorder tend to zoom in and out repeatedly, creating a picture that is tiring to watch. Certainly, the "zoom" has its place in visual expression. But this is only one of the many capabilities of a zoom lens. With experience, you will find that the zoom action is most effective when used sparingly. A zoom lens is like having many different lenses in one, from wide angle to telephoto. By adjusting the zoom lens, you choose the ideal perspective to match each part you take of the action or story.



FOLLOW ZOOM

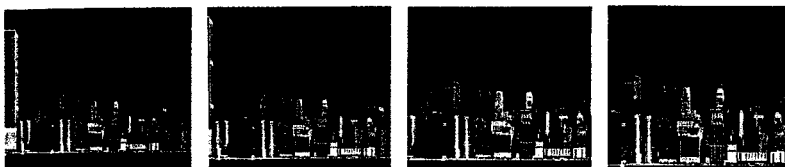
Even if your Camcorder has a power zoom lens, there are some types of shots where manual adjustment will give a more interesting effect. The "follow zoom" is one example. As the subject moves toward you, zoom out (W) slowly so that the subject stays the same size in the picture. Therefore, the background changes although the subject does not seem to be getting closer to the viewer.



Follow Zoom

SLOW AND FLASH ZOOM SHOTS

If you zoom in very, very slowly on a distant scene, you will get a powerful effect that is quite different from normal speed zooming. In fact, this kind of very slow zoom image can give the same feeling as using a more powerful zoom lens. Another case is the "flash zoom". Here you zoom in as fast as possible, creating a dynamic tension in the picture.



Slow Zoom



Flash Zoom

BASIC GUIDE FOR CAMCORDER SHOOTING

ANGLES

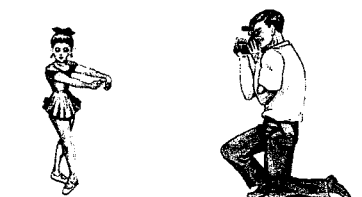
Camera angle informs the audience of their position. The most natural position of the audience is at "eye level"; at this position the audience's attention will most naturally be drawn to your subject.

PROPER ANGLE

The height and position of the Camcorder in relation to the subject has a big influence on how the final picture will look. Keeping the Camcorder at the subject's eye level creates the most "normal" or least distracting conventional impression. If the person is standing, then you hold the Camcorder at the same level as their eyes. If the person is sitting down, hold the Camcorder lower so it is still at eye level. Similarly, you would lower the Camcorder to match the height of a child, or a pet. Although "eye level" gives the most natural coverage of a subject's actions, there are many other possibilities. If you are recording from above eye level, then it is called a "high-angle" shot. If you are recording upwards from below eye level, then it is a "low-angle" shot.



High Level



Mid Level



Low Level

SPECIAL ANGLE

Using an extreme low angle shot, you effectively "look up to" the subject, creating a feeling of authority, power, or oppression. You can try this by putting the Camcorder at nearly ground level and recording people, tall buildings, or cars racing along a road. On the other hand, a high angle is good for "cover shots" at the beginning of a scene when you want to orient the viewer or establish the situation. In this case, you would set the telephoto lens to the wide-angle position to cover the largest area. But how can you get a shot from above your own eye level? With the Camcorder, you simply hold it above your head while watching a small portable monitor TV as a viewfinder or it is recommended that you record from the upper floors of a nearby building.



Looking Up to a Subject

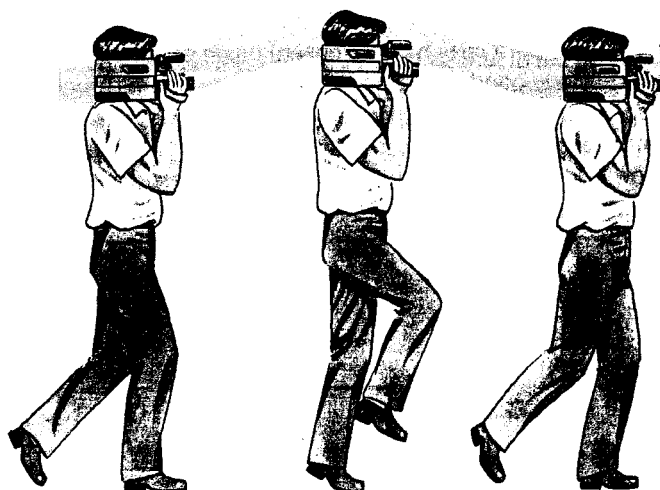


Looking Down to a Subject

BASIC GUIDE FOR CAMCORDER SHOOTING

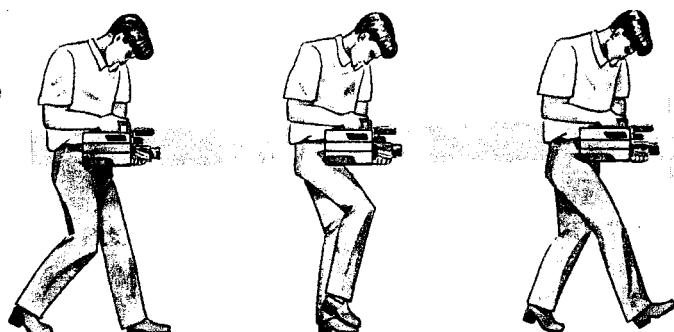
MOVEMENT

In the previous pages we have assumed that the Camcorder was kept motionless. However, you will often want to move the Camcorder, either to make the picture more interesting or to cover a moving subject. This is when you run into problems of picture instability. As your head bobs up and down, so will the picture. Professional cameramen keep a steady picture by walking with their legs bent, twisting their hips, and holding the Camcorder parallel to the walking surface. But this takes a lot of practice. One way out is to move with the same rhythm as the subject so the viewer will not notice the unsteadiness.



You can swing the eyepiece away from the EVF (Electronic Viewfinder) and hold the Camcorder away from your body. Often the angle of the EVF can be changed for easy viewing when the Camcorder is not at eye level. ★

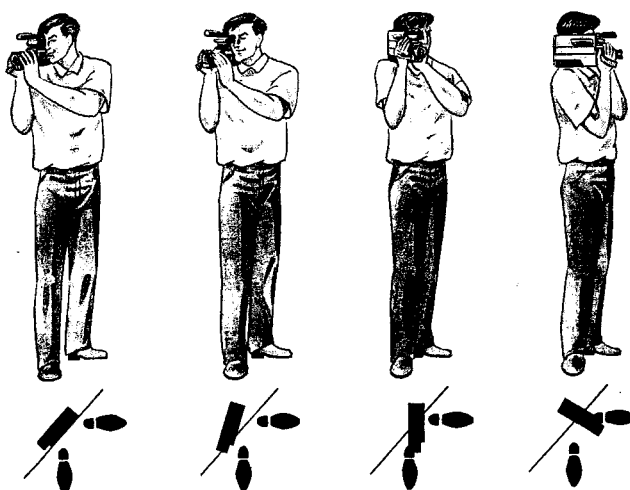
★ This technique is not applicable to models which have fixed eyepieces.



THE ART OF PANNING

Panning is a pivotal movement of the Camcorder from left to right or vice versa. You will often want to hold the shot for a few seconds after you finish panning. But if your body is twisted you can't hold the Camcorder steady. To avoid this, stand so that the Camcorder will be directly in front of you when you come to the end of the pan. In other words, you twist your body into position for the beginning of the pan. For the greatest stability and smoothest panning (and tilting) movement, we recommended using a tripod.

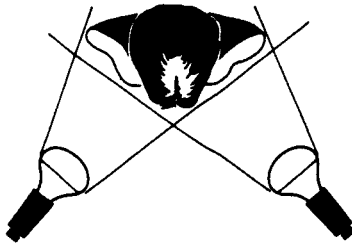
NOTE: Your Camcorder manual illustrations may differ from the model of your choice. However, the techniques suggested here for video movie making are generally applicable.



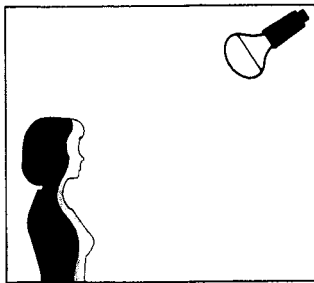
BASIC GUIDE FOR CAMCORDER SHOOTING

LIGHTING

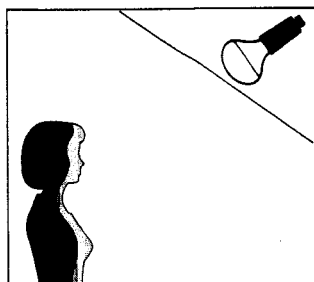
Lighting is often necessary to achieve sufficient brightness for a good picture. It is also an art in itself. Many amateurs simply mount a light on the Camcorder or use two lights parallel to the Camcorder on either side. This simple approach creates strange shadows and tends to make the subject look flat.



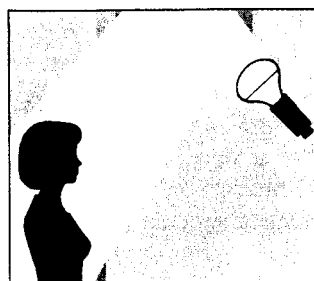
Good lighting "models" the subject, giving a natural three-dimensional effect. If you are going to use lights on both sides, it is better to have one as a "sunlight" with about one-third the brightness. If both bulbs are the same wattage, put the sublight 1.7 times further away than the main light.



For a more three-dimensional effect, the main light should be raised so that it is at 45° vertical angle.



To prevent dark shadows when using a strong light, diffuse the light with tracing paper (but keep the paper far enough away to prevent a fire).



Or bounce the light off the ceiling. However, light bouncing off the walls or ceiling may cause an undesirable color change in the picture.